The Contested Lens:

Science Journalism in Bangladesh

S M Nazmuz Sakib

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S M Nazmuz Sakib

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The Contested Lens: Science Journalism in Bangladesh
Power, Truth, Authority, and the Architecture of Public Knowledge

Author: S M Nazmuz Sakib

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Disclaimer

This textbook is designed for graduate and advanced undergraduate students in journalism, communication studies, science policy, law, and sociology in Bangladesh and the broader South Asian context. It draws on international theory, Bangladeshi legal history, comparative jurisprudence, and the lived professional experiences of working journalists. It does not pretend to be a neutral document. Journalism, and especially science journalism, is never neutral. This

book is committed to the idea that honest engagement with complexity, contradiction, and controversy is the only foundation on which a mature journalistic profession can be built.

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PART ONE: FOUNDATIONS, PHILOSOPHY, AND THE FRACTURED LANDSCAPE

Prolegomena: On the Difficulty of Beginning

There is no innocent starting point for a textbook about science journalism in Bangladesh. Every word of such a project is already entangled in politics, in history, in the specific violences and specific silences that have shaped the country's media landscape over five decades of independent existence. To write about science journalism in Bangladesh is to write about power: about who gets to speak, who gets silenced, whose knowledge counts as legitimate, and whose is dismissed as ignorance or dissent. It is to write about institutions that are simultaneously the defenders and the destroyers of public reason. It is to write about men and women who go to work each morning knowing that the story they will file might result in their arrest, their professional ruin, or worse.

This is not hyperbole. Between August 2024 and April 2026, the period during which the final drafts of this book were being prepared, Bangladesh experienced the fall of a government that had ruled for fifteen years under conditions of systematic press suppression, the rise of an interim government that initially promised radical reform of the media environment, and the subsequent disappointment of many of those promises. Within eight months of the interim government assuming power under Chief Adviser Muhammad Yunus, 640 journalists had been subjected to formally legal procedures including anti-terrorism prosecutions, accreditation revocations, and financial investigations. Oxford Human Rights Hub Since late 2025, prominent journalists including Anis Alamgir and Shaukat Mahmood were detained or remanded under the Anti-Terrorism Act for alleged propaganda and conspiracy, a trend that Amnesty International characterized as a direct violation of international human rights obligations. International Federation of Journalists

At the same time, and this complexity is essential for the student to hold in mind simultaneously, the same period saw genuine, substantive efforts to reform a media environment that had been thoroughly captured by the preceding regime. The Bangladesh Media Reform Commission published recommendations that, if fully implemented, would represent a significant transformation of the country's journalism infrastructure. UNESCO, ARTICLE 19, and the International Federation of Journalists convened dialogues, submitted policy papers, and engaged with government officials in ways that suggested real possibilities for change. World Press

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Freedom Day 2025 in Bangladesh was described as more than a day of reflection, constituting instead a bold call to action, as journalists, civil society members, and public officials collectively recognized that without urgent reform, the space for independent journalism would continue to shrink. UNESCO

The student of science journalism in Bangladesh must learn to live inside this tension: between the genuine and continuing suppression of press freedom and the genuine and continuing struggle for its expansion; between the institutional capture of media by political and commercial interests and the principled resistance of individual journalists and civil society organizations; between the international standards of science communication that the profession aspires to and the local realities of poverty, censorship, and professional precarity that define what is actually possible.

Science journalism, as a subspecialty within the broader domain of journalism, does not escape these tensions. It intensifies them. When a journalist reports on a new agricultural technology that might benefit millions of farmers, she is immediately in the middle of complex questions about corporate interests, government agricultural policy, environmental risk, and the scientific credibility of studies that may have been funded by parties with a financial stake in the outcome. When a journalist reports on climate change, he must navigate between international scientific consensus, the interests of industries that prefer denial or delay, the specific vulnerabilities of a delta nation like Bangladesh that faces some of the most severe consequences of global warming, and a media environment in which editorial independence is a luxury rather than a right. When a journalist reports on a pharmaceutical trial, a disease outbreak, or a food safety scandal, she is always already inside a web of institutional power, professional ethics, legal constraints, and scientific uncertainty that makes the simple transmission of "facts" to "the public" not merely difficult but philosophically incoherent as a description of what journalism actually does.

This book is about those tensions, those complexities, and those impossibilities. It is about the theory and the practice, the philosophy and the law, the history and the present moment of science journalism in a country that is simultaneously one of the world's most fascinating experiments in post-colonial democratic development and one of its most cautionary tales about the vulnerability of free expression to political and economic power.

Chapter One: What is Science Journalism? Definitions, Debates, and Discontents

1.1 The Problem of Definition

Any honest treatment of science journalism must begin with the uncomfortable admission that the term itself is deeply contested. There is no universally accepted definition of what science journalism is, what it should do, or who should be considered a science journalist. This is not merely an academic quibble. The definitional question carries substantial practical and ethical implications. It determines who is credentialed and who is not, whose stories are treated as legitimate scientific communication and whose are dismissed as sensationalism or advocacy,

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which institutions fund science reporting and under what conditions, and what legal protections, if any, attach to the person who calls herself a science journalist.

At the most basic level, science journalism refers to the practice of reporting on scientific research, scientific institutions, and the social consequences of scientific and technological change for non-specialist audiences. This definition, however, immediately generates more questions than it answers. What counts as "science" for these purposes? The physical and biological sciences are the obvious candidates, but what about social science, medicine, public health, environmental studies, technology, and engineering? In Bangladesh, where agricultural science, climate science, and public health science intersect directly with the livelihoods and survival of millions of people, the scope of science journalism is necessarily broader and more politically charged than it might be in a wealthy country with more insulated institutions.

The phrase "non-specialist audiences" is similarly slippery. Who constitutes "the public" in a country where literacy rates, though dramatically improved over the past three decades, remain uneven, where access to media varies enormously across urban and rural populations and across class lines, and where science communication competes with religious authority, political propaganda, and commercial entertainment for the attention of ordinary citizens? The imagined audience of science journalism shapes the practice of science journalism in profound ways, and the assumptions that journalists make about their readers and viewers are themselves politically and culturally loaded.

The philosophical tradition of the philosophy of science offers a set of deeper challenges to any simple understanding of what science journalism does. If the task of science journalism is to communicate what science has discovered, then the journalist must have some theory of what counts as genuine scientific discovery, as opposed to preliminary finding, contested hypothesis, or manufactured consensus. The philosopher Karl Popper's criterion of falsifiability, Thomas Kuhn's analysis of scientific revolutions and the role of paradigms, Imre Lakatos's theory of research programs, and Paul Feyerabend's provocative "anything goes" epistemology all suggest different frameworks for evaluating the status of scientific claims, and none of them is fully adequate to the practical demands of journalism. The journalist on deadline cannot wait for philosophical certainty. She must make judgments about what counts as credible science, and those judgments are never purely scientific. They involve institutional authority, professional norms, cultural assumptions, and often quite explicit political pressures.

Naomi Oreskes and Erik Conway, in their landmark study "Merchants of Doubt" (2010), showed how the tobacco industry, and later the fossil fuel industry, systematically manufactured scientific controversy in order to delay regulatory action. The implication for science journalism is that the apparent uncertainty of scientific debate is sometimes real and sometimes artificially produced, and the journalist who cannot distinguish between genuine scientific uncertainty and manufactured doubt is not merely failing at epistemology: she is serving as an instrument of corporate harm. In the Bangladeshi context, this problem takes specific and urgent forms. The garment industry, the chemical industry, and the agribusiness sector all have interests in managing, minimizing, or distorting scientific information about environmental damage,

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occupational health, and food safety. The science journalist who cannot see through these interests is not a neutral communicator of facts: she is a participant in a system of deception.

1.2 Models of Science Journalism: From Transmission to Dialogue

The intellectual history of science journalism can be understood as the gradual, still incomplete, and fiercely contested movement from one model to another: from the transmission model to the dialogue model, from the deficit model to the contextual model, from the idea that science journalism is about filling ignorant heads with correct information to the idea that it is about facilitating genuine public engagement with complex, uncertain, and contested knowledge.

The transmission model, also sometimes called the "pipeline" model, assumes that scientific knowledge is produced by experts, exists in a condition of settled authority, and needs only to be translated from technical language into accessible language for delivery to a passive public. This model dominated popular science writing and science journalism for much of the twentieth century. It assumed a clear hierarchy: scientists at the top, journalists as middlemen, and the public as recipients. It assumed that the primary failure in public understanding of science was a failure of information delivery, not a failure of institutional design, political economy, or epistemological modesty. And it assumed that more and better information would automatically produce more rational and more scientifically literate citizens, who would then make better decisions about public policy.

The evidence for the transmission model has never been strong. Survey after survey has shown that providing people with more scientific information does not necessarily change their attitudes or behaviors on contested issues like climate change, vaccination, or genetically modified crops. The Yale Cultural Cognition Project, led by Dan Kahan, has produced substantial research suggesting that people's evaluation of scientific evidence is heavily shaped by their cultural identities and group affiliations, and that providing more information often entrenches rather than reduces cultural divisions over scientific questions. This finding has profound implications for science journalism in Bangladesh, where religious authority, political loyalty, and community identity all interact with the reception of scientific information in complex and unpredictable ways.

The contextual model, articulated by scholars like Brian Wynne and Sheila Jasanoff, argues that the public's reception of science is not primarily a function of how much science people know but of whether they trust the institutions that produce and communicate science. Wynne's classic study of Cumbrian sheep farmers after the Chernobyl disaster showed that the farmers had sophisticated and empirically grounded reasons for distrusting the scientific advice they received from government experts, and that their skepticism was a rational response to a history of institutional failure, not a symptom of scientific illiteracy. The implication for science journalism is that trust, transparency, and the acknowledgment of uncertainty and institutional interest are at least as important as the accurate transmission of technical information.

The dialogue model goes further, arguing that science journalism should be understood not as communication but as conversation: as a process in which diverse forms of knowledge, including

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traditional ecological knowledge, community experience, and lay expertise, are brought into productive engagement with formal scientific research. This model resonates strongly in the Bangladeshi context, where communities affected by arsenic contamination in groundwater, by the flooding and erosion associated with climate change, and by the environmental damage caused by shrimp aquaculture have developed sophisticated practical knowledge about their situations that is often ignored by formal scientific and government institutions. The science journalist who operates within the dialogue model is not just a conduit between scientists and the public: she is an advocate for the inclusion of marginalized forms of knowledge in public deliberation.

Each of these models generates different professional ethics, different institutional structures, and different relationships with power. The student of science journalism needs to understand all of them, to appreciate their strengths and limitations, and to develop a critical capacity for choosing between them depending on the specific context and purpose of her work.

1.3 The Journalist as Translator, Critic, and Witness

Three metaphors have been particularly influential in thinking about the role of the science journalist: the journalist as translator, the journalist as critic, and the journalist as witness. Each metaphor illuminates something important and obscures something important.

The translator metaphor emphasizes the linguistic and conceptual work of making technical scientific language accessible to non-specialists. This is genuinely important and genuinely difficult work. The terminology of molecular biology, quantum mechanics, epidemiology, and climate science is not merely jargon: it encodes important distinctions and precise meanings that resist casual paraphrase. The good science journalist must understand what she is translating well enough to know when a simplification is acceptable and when it is a distortion. She must be able to assess the quality of scientific evidence, to distinguish between peer-reviewed findings and press releases, between correlation and causation, between statistical significance and practical significance, and between the provisional findings of a single study and the weight of accumulated evidence.

In Bangladesh, the translator role is complicated by the fact that science journalism must often operate across not just one linguistic boundary (from English to Bangla, or from technical to vernacular) but multiple ones. The dominant language of international scientific research is English. Much of the scientific literature relevant to Bangladesh, including research on arsenic contamination, on cyclone risk, on dengue fever epidemiology, and on the nutritional consequences of food insecurity, is published in English in international journals. The science journalist who wants to bring this knowledge to a Bangla-speaking audience must perform not just translation in the technical sense but genuine cultural and contextual adaptation, explaining not just what the science says but why it matters for this specific community in this specific context.

The critic metaphor emphasizes a different set of responsibilities: the journalist not as conveyor of information but as evaluator of claims, institutions, and interests. The critic in this sense is not

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merely a negative or adversarial figure. She is someone who brings judgment, skepticism, and analytical capacity to her engagement with science and scientific institutions. She asks not just what scientists have found but how they found it, who funded the research, what conflicts of interest are at play, what the researchers' track record has been, and whether the institutional context in which the research was produced might have shaped its conclusions. She is aware that scientific institutions, like all human institutions, are subject to bias, corruption, professional defensiveness, and ideological capture, and she does not treat the authority of a degree or a laboratory affiliation as a substitute for evidence.

In the Bangladeshi context, the critic role is particularly important and particularly dangerous. The nexus between scientific authority and political power in Bangladesh is extremely tight. Government research institutions, university science departments, and public health agencies are all subject to political pressure, and scientists who challenge official positions often face serious professional consequences. The science journalist who takes the critic role seriously is not just challenging scientific claims: she is challenging institutional power, and she does so in a context where institutional power has historically demonstrated both willingness and capacity to retaliate.

The witness metaphor captures something that both the translator and critic metaphors miss: the science journalist as someone who is physically and politically present at the places where science and society intersect, who sees what is happening and testifies to it with the authority of direct observation. The journalist who goes to the char lands of the north to report on how climate change is transforming the lives of seasonal laborers, who visits the garment factories of Ashulia to document the occupational diseases caused by chemical exposure, who sits with families in Sylhet whose children have died from a disease outbreak that the local health department refuses to acknowledge, is doing something different from translation or critique. She is bearing witness, and her testimony is a form of accountability.

These three metaphors are not mutually exclusive, and the most sophisticated science journalism draws on all three. But they generate different priorities, different methods, and different relationships with power. The translator tends toward collaboration with scientific institutions. The critic tends toward adversarial engagement. The witness tends toward solidarity with affected communities. The most important theoretical debates in science journalism are debates about the proper balance between these three orientations.

Chapter Two: The History of Science Journalism in Bangladesh - Contested Origins and Complicated Legacies

2.1 The Colonial Inheritance

The history of journalism in Bangladesh cannot be understood without understanding the colonial inheritance from which it emerged. The subcontinent's press, including what would eventually become the Bangladeshi press, was formed under conditions of colonial rule that

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simultaneously produced journalism as a tool of anti-colonial resistance and constrained it through a regime of censorship, sedition laws, and institutional control that shaped the legal and professional culture of journalism for generations.

The Press Act of 1835, initially introduced under Governor-General William Bentinck and revised over subsequent decades, established the basic framework for press regulation in colonial India, including the territories that would eventually become Pakistan and then Bangladesh. The colonial press regulation regime was primarily concerned with suppressing political dissent, maintaining social order, and protecting the authority of colonial institutions. Science journalism, as such, barely existed as a category in the colonial press, but the broad framework of press regulation established by the colonial state created the legal and institutional structures within which all journalism, including science journalism, would eventually develop.

More significant for the specific history of science journalism in Bangladesh was the colonial approach to science itself. British colonial science was never merely disinterested inquiry. It was a tool of governance, of resource extraction, and of the production of knowledge about colonized peoples and territories that served colonial administrative purposes. The Survey of India, the botanical gardens at Calcutta, the geological and agricultural surveys, the census machinery, and the epidemiological research that accompanied colonial public health interventions were all forms of knowledge production embedded in and serving the interests of colonial power. The Bangladeshi student of science journalism must understand this history because it helps explain the deep ambivalence that has characterized the relationship between science, the state, and the public in the post-colonial period.

This ambivalence has two faces. On one hand, science has been celebrated in post-colonial Bangladesh, as in other post-colonial states, as a vehicle of development, modernization, and liberation from poverty and disease. The narrative of scientific progress has been central to the self-understanding of the developmental state that emerged after 1971. On the other hand, the memory of colonial science's complicity in exploitation and humiliation has created a persistent, if often unarticulated, skepticism about scientific authority and institutional expertise, particularly when that expertise serves the interests of foreign powers or domestic elites.

2.2 The Formation of a National Press in East Pakistan (1947-1971)

The partition of 1947 created East Pakistan from the predominantly Muslim-majority districts of Bengal, establishing a new nation-state with an extraordinarily diverse and politically charged press environment. The newspapers and magazines of East Pakistan inherited the staff, the printing presses, the readership habits, and the professional norms of the colonial Bengali press, while simultaneously being asked to serve the new realities of a Muslim-majority province within an Islamic republic governed from a distant capital in the west.

The fundamental contradiction of Pakistani nationhood, between the Islamic ideological unity asserted by the Pakistani state and the Bengali linguistic and cultural identity of the East Pakistani population, structured every aspect of journalism in the province. This contradiction was not primarily about science, but it had significant implications for science journalism. The

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Pakistani state's insistence on Urdu as the sole national language, which provoked the language movement of 1952 and the events of February 21st that would eventually become a UNESCO-recognized international day, created an environment in which the very act of publishing in Bangla was a form of political resistance. Science journalism, to the extent that it existed at all in East Pakistan, was necessarily conducted in the shadow of this fundamental political dispute.

The 1952 language movement is important for the history of science journalism not just as a political fact but as an epistemological one. The movement asserted the legitimacy of Bangla as a medium of serious intellectual discourse, including scientific discourse. This was not a trivial claim. The colonial and post-colonial hierarchy of languages in the subcontinent placed English and then Urdu above Bangla as appropriate media for sophisticated thought, and the implicit message of this linguistic hierarchy was that Bangla-speaking people were less capable of participation in modern scientific culture. The language movement's assertion of Bangla's dignity was therefore implicitly also an assertion of the right of Bangla-speaking people to participate in scientific knowledge production and communication on equal terms.

The newspapers and periodicals that flourished in East Pakistan during the 1950s and 1960s included a number of publications that carried significant amounts of science-related content. The Dainik Pakistan, Azad, and later Ittefaq all published popular science articles, coverage of international scientific developments, and reportage on agricultural and public health issues that were of immediate practical importance to the population. This was science journalism in a broad sense, even if it was rarely recognized as such. It was coverage of scientific issues embedded in a general-interest press that did not have the specialized science sections or science correspondents that would later become standard in larger media organizations.

The founding of the Bangladesh Agricultural Research Institute in 1972, the Bangladesh Institute of Nuclear Agriculture, and a series of other scientific research bodies after independence created an institutional base for science that would eventually support more systematic science journalism. But in the East Pakistan period, these institutions did not yet exist, and science journalism was largely a matter of individual journalists with scientific curiosity writing for general audiences about developments that they found interesting or important.

The specific pressures of the Pakistani state's censorship apparatus shaped what could and could not be written about scientific matters. Agricultural policy, the performance of state-run industrial enterprises, and environmental issues were all politically sensitive in ways that constrained reporting. The science journalist who wanted to report critically on the failure of a government rice breeding program, for instance, was not just challenging scientific institutions: she was potentially challenging the authority of the state, and in an environment where political journalism was already tightly constrained, the additional risks of critical science reporting were substantial.

2.3 Independence, Reconstruction, and the First Decade of Bangladeshi Science Journalism (1971-1981)

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The Liberation War of 1971, which resulted in the creation of Bangladesh after nine months of brutal conflict and the Pakistani military's genocidal campaign against the Bengali civilian population, fundamentally transformed every aspect of Bangladeshi social and political life, including the media. The war itself was extensively covered by international journalists, some of whose reporting played an important role in documenting the atrocities committed by the Pakistani military and galvanizing international pressure on the parties. But the war also destroyed much of the existing press infrastructure of East Pakistan, and the new Bangladeshi state had to rebuild its media landscape almost from scratch.

The first Constitution of Bangladesh, adopted in 1972, guaranteed freedom of the press as part of a broader commitment to fundamental rights. Article 39 of the Constitution, which remains in force in its essential structure, guarantees freedom of thought and conscience and freedom of speech and expression, subject to reasonable restrictions in the interests of security, public order, decency, and morality. The constitutional guarantee of press freedom was an important symbolic commitment, but the actual practice of press freedom in post-independence Bangladesh was shaped as much by political economy, institutional culture, and the specific configurations of power of each successive government as by constitutional text.

The Sheikh Mujibur Rahman government of 1972-1975 began with genuine enthusiasm for press freedom but ended with the infamous Fourth Amendment of January 1975, which transformed Bangladesh into a one-party state under the Bangladesh Krishak Sramik Awami League (BAKSAL) and effectively nationalized most of the press. This experience, which was followed by the military coup of August 1975 and Sheikh Mujib's assassination, established a pattern that would recur throughout Bangladeshi history: the initial promise of press freedom followed by increasing political pressure, followed by formal or informal capture of the media by whoever held power.

For science journalism specifically, the immediate post-independence period was characterized by urgent practical concerns. Bangladesh in 1971-1972 was one of the poorest and most disaster-prone countries in the world. Famine was a real and imminent threat. Cholera, smallpox, and other communicable diseases were endemic. The infrastructure of agricultural production had been severely disrupted by the war. The scientific and technical questions most urgently facing the country were questions of agricultural productivity, public health, and disaster management, and the journalists who covered these issues were effectively science journalists even if they did not use that term.

The coverage of the 1974 famine is particularly instructive for understanding the relationship between science journalism, political power, and public accountability in Bangladesh's early history. The famine of 1974, which killed hundreds of thousands of people, was partly a consequence of flooding that destroyed crops, but it was also, as the economist Amartya Sen would later argue in his seminal work on famines and democracy, a consequence of the failure of the political and economic systems that distributed food. Journalists who wanted to report critically on government failures in famine management were operating in an increasingly hostile political environment, and the science of famine, including the epidemiology of famine-related

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disease, the agronomy of flood-affected agriculture, and the economics of food distribution, was inextricably entangled with the politics of accountability.

The years 1975-1981 saw Bangladesh pass through two military coups, the rule of General Ziaur Rahman, and the establishment of a modified party system under conditions of continued military control. The press environment during this period was controlled but not entirely suppressed. Ziaur Rahman's government showed some tolerance for critical journalism on non-political matters, and the late 1970s saw a genuine, if constrained, expansion of science-related reporting in the Bangladeshi press. The coverage of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), which was and remains one of the world's leading centers for research on infectious disease, cholera, and child health, provided a model for how science journalism could cover internationally significant research in ways that served both the interests of scientific communication and the specific informational needs of a population facing serious public health challenges.

2.4 Science Journalism in the Era of Military Rule and Partial Democracy (1982-1990)

The military coup of 1982, which brought General Hussain Muhammad Ershad to power, inaugurated an eight-year period of formal military rule that placed severe constraints on all journalism, including science journalism. The Ershad government's press controls, while severe, were not uniformly applied. Scientific and technical reporting that did not touch on politically sensitive matters was generally tolerated, and in some cases even encouraged, because science journalism could serve the government's development narrative by highlighting the achievements of state-funded research institutions.

This pattern, in which science journalism is permitted and even promoted precisely because it can serve as a vehicle for government propaganda about development achievements while more critical political journalism is suppressed, is one that would recur throughout Bangladeshi history. The science journalist who covers the launch of a new high-yielding variety of rice developed at the Bangladesh Rice Research Institute (BRRI) in terms that emphasize government investment and achievement is doing a form of science journalism, but she is also functioning as a public relations officer for the state. The science journalist who asks where the funding came from, whether the variety has been adequately tested for environmental safety, who benefits from its commercialization, and what happens to the farmers who cannot afford the inputs required to make it productive is doing something quite different. In the Ershad period, the first type of science journalism was acceptable. The second was not.

The development of an organized science journalism community in Bangladesh began in the 1980s, partly as a result of international influences. The World Federation of Science Journalists, founded in 1967, began to develop programs of training and networking for science journalists in developing countries, and Bangladeshi journalists participated in some of these programs. The influence of the British science journalism tradition, particularly the model represented by New Scientist and the science coverage of the BBC, was significant. The science journalism of Indian publications like the Economic and Political Weekly and Frontline also influenced the emerging

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Bangladeshi science journalism community, providing models for how science coverage could be embedded in broader critical analysis of political economy.

The founding of the Bangladesh Journalist Center and the development of various professional associations for journalists during the 1980s created institutional structures that would eventually support more specialized science journalism. But these structures were also immediately contested. The question of who could legitimately claim professional journalist status, and what protections and privileges attached to that status, was from the beginning entangled with political and commercial interests. The press cards issued by the government were a form of institutional recognition that carried significant practical benefits, including access to official events and information, but they were also a mechanism of control, since the government could revoke accreditation from journalists it found inconvenient.

2.5 The Democratic Opening and Its Limitations (1990-2006)

The fall of the Ershad government in 1990, achieved through a mass movement that brought together student organizations, trade unions, and political parties, opened a new chapter in Bangladeshi political and media history. The subsequent period of democratic governance, alternating between the Awami League under Sheikh Hasina and the Bangladesh Nationalist Party under Khaleda Zia, saw significant expansion of the media landscape. New newspapers were founded, television broadcasting was liberalized (though with continued government influence over the national broadcaster, Bangladesh Television), and a new generation of journalists entered the profession with greater expectations of independence and professional standards.

Science journalism during this period benefited from the general expansion of the media environment. Several major newspapers developed dedicated science pages or sections, and some appointed journalists with scientific backgrounds or provided training programs for reporters covering science-related beats. The coverage of environmental issues, particularly the twin crises of arsenic contamination of groundwater and the consequences of shrimp aquaculture for coastal ecosystems and communities, became significant areas of science journalism during the 1990s.

The arsenic crisis deserves particular attention as a case study in science journalism in the Bangladeshi context. Beginning in the late 1980s and accelerating through the 1990s, researchers discovered that a significant proportion of the tube wells that had been installed across Bangladesh as part of an internationally funded effort to provide safe drinking water were in fact contaminated with naturally occurring arsenic at levels far above safe limits. This was a public health catastrophe of enormous proportions, affecting an estimated 35 to 77 million people and causing widespread morbidity and excess mortality from arsenicosis, cancer, and cardiovascular disease. It was also a story that exposed the failures of international development institutions, including UNICEF and the World Bank, which had promoted the tube well program without adequate testing for arsenic contamination, and of the Bangladeshi government, which was slow to acknowledge the problem and even slower to develop effective responses.

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The science journalism around the arsenic crisis illustrates both the possibilities and the limitations of the field in the Bangladeshi context. On the positive side, investigative reporters working for publications including the Daily Star and Prothom Alo produced important reporting on the scale of the crisis, the failures of official response, and the plight of affected communities. This reporting helped put political pressure on institutions that might otherwise have preferred to minimize or deny the problem. It also connected Bangladeshi journalists with international networks of science journalists and public health advocates, providing professional development opportunities and models for best practice.

On the negative side, the arsenic reporting also illustrated the ways in which science journalism can be distorted by institutional interests, inadequate training, and the specific constraints of the Bangladeshi media environment. Some reporting was inaccurate, some was sensationalist in ways that created unnecessary panic among affected communities, and some failed to adequately explain the complex and still partially contested science of arsenic exposure and health effects. The absence of journalists with genuine scientific training meant that much of the reporting relied heavily on the authority of scientific institutions whose own interests might not be perfectly aligned with the information needs of the affected public.

2.6 The Digital Security Act, Media Capture, and the Crisis of Science Journalism (2006-2024)

The period from 2006 to 2024 was dominated, from the perspective of media freedom, by the progressive tightening of legal and institutional constraints on journalism under a series of governments, culminating in the Sheikh Hasina government's use of first the Information and Communication Technology (ICT) Act and then the Digital Security Act (DSA) to systematically suppress critical journalism of all kinds, including science journalism.

The Digital Security Act, adopted in 2018 to replace the widely criticized ICT Act of 2006, was used as a tool of harassment and intimidation. Authorities used the law against politicians in 73 of 222 analyzed cases, and other powerful figures deployed the law to settle personal rivalries. Accused journalists were often arrested arbitrarily, without a warrant, with some facing multiple overlapping cases, as the DSA allowed anyone to allege a violation regardless of whether they were the subject of the accused's reporting. Cfj

For science journalists specifically, the DSA created a chilling effect that extended far beyond those directly prosecuted. A science journalist who reported critically on the health effects of industrial pollution in a factory district, who investigated the safety of drugs approved by the Drug Administration under political pressure, or who covered the environmental consequences of infrastructure projects approved by influential politicians, was potentially liable under the DSA's sweeping provisions against content that "damaged" the "image of the state," "created unrest or confusion," or was deemed harmful to national security. Since these provisions were vague enough to encompass almost any critical reporting, and since enforcement was selective and arbitrary, they created maximum uncertainty and maximum deterrence.

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The Sheikh Hasina government relentlessly multiplied the obstacles facing journalism. Given these conditions, newsrooms carefully avoided challenging the government and resorted to self-censorship. Reporters Without Borders In the context of science journalism, this self-censorship had specific and devastating consequences. Climate science, which pointed to governmental failures in disaster preparedness and to the environmental consequences of industrial policies that benefited powerful interests, was systematically underreported. Pharmaceutical regulation, which was deeply entangled with political patronage networks, was essentially off-limits for critical investigation. Agricultural science, which touched on land rights, pesticide regulation, and the interests of agribusiness companies with political connections, was covered in ways that systematically avoided the most significant stories.

The government's capture of media through both formal legal mechanisms and informal economic pressure was extensive. During Hasina's tenure, many major media outlets were controlled by a few conglomerates that allegedly used them to curry favour with the government rather than serve the public interest. Al Jazeera Institute In this environment, the concept of editorial independence became largely theoretical. Publishers who depended on government advertising revenue, or whose other business interests were subject to government regulatory discretion, had powerful economic incentives to avoid stories that might displease the government. Science journalists, like their colleagues covering politics, economics, and social affairs, operated within these constraints, and the result was a systematic distortion of the public's understanding of the scientific and technological dimensions of their society.

Chapter Three: The Philosophy of Science and Its Implications for Journalism

3.1 Epistemology and the Problem of Scientific Truth

The philosophy of science, or epistemology of science, is concerned with fundamental questions about the nature, scope, and limits of scientific knowledge. These questions are not merely academic: they have direct and substantial implications for how science journalism should be practiced and how it should be evaluated. A science journalist who operates with a naive positivist understanding of science as the straightforward accumulation of objective facts will practice journalism very differently from one who has internalized the lessons of post-positivist philosophy of science.

Positivism, associated in its classical form with Auguste Comte and in its logical form with the Vienna Circle philosophers of the early twentieth century, held that genuine knowledge could only be derived from observation and logical reasoning, and that metaphysical and evaluative claims were meaningless. In the positivist view, science was the paradigm of all genuine knowledge because it was grounded in empirical observation and logical inference. The positivist science journalist would report scientific findings as established facts, would defer to the authority of scientific institutions and peer review, and would treat dissent from scientific consensus as either ignorance or dishonesty.

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Karl Popper's falsificationism, developed as a critical response to positivism, offered a more sophisticated account of the logic of scientific inquiry. For Popper, what distinguished science from non-science was not that scientific claims were verified by observation but that they were falsifiable: that they made predictions that could in principle be shown to be wrong. A genuine scientific theory puts itself at risk. It commits to specific empirical consequences, and if those consequences fail to materialize, the theory must be revised or abandoned. This criterion of falsifiability has significant implications for science journalism. It suggests that the journalist should pay particular attention to the predictions that scientific theories make, to the evidence that bears on those predictions, and to the honesty and rigor with which scientific communities respond to disconfirming evidence.

Thomas Kuhn's analysis of scientific revolutions, developed in "The Structure of Scientific Revolutions" (1962), challenged both positivism and Popperian falsificationism by showing that actual scientific practice was not as logically tidy as either account suggested. Kuhn argued that science normally proceeds within a paradigm, a shared framework of assumptions, exemplary problems, and accepted methods, and that the paradigm shapes what counts as a significant problem, what counts as an adequate solution, and what anomalies can be set aside as minor puzzles versus what anomalies represent a genuine challenge to the paradigm. Scientific revolutions occur when accumulated anomalies destabilize the paradigm and a new paradigm emerges to replace it, but this process is not purely logical: it involves social factors, generational change, and what Kuhn controversially described as a kind of conversion experience in which scientists switch their allegiance from one paradigm to another.

The Kuhnian analysis has ambiguous implications for science journalism. On one hand, it suggests that scientific consensus deserves respect, because it represents the accumulated judgment of a community of trained experts working within an established framework. On the other hand, it suggests that all scientific paradigms are provisional and historically situated, and that apparently settled scientific questions can be reopened by new evidence or new ways of thinking. The science journalist who automatically defers to current scientific consensus may be missing the next revolution. The science journalist who treats all scientific claims as equally open to challenge may be serving the interests of those who wish to delay action on urgent problems by manufacturing false uncertainty.

The feminist philosophy of science, developed by scholars including Sandra Harding, Donna Haraway, and Helen Longino, offers another set of challenges to conventional accounts of scientific objectivity. These scholars argue that science is not a view from nowhere: it is always produced from a particular social position, and the social position of the producer shapes what questions are asked, what methods are used, what evidence is deemed relevant, and how results are interpreted. This is not merely a claim about individual bias: it is a structural claim about the way that social hierarchies of gender, race, class, and colonialism shape the entire enterprise of scientific knowledge production.

For science journalism in Bangladesh, the feminist science studies perspective is particularly important. Much of the science that has been done about Bangladesh has been done by researchers from wealthy countries, in institutions based in wealthy countries, using methods

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developed in wealthy countries, and with research agendas that have been shaped by the priorities and frameworks of wealthy-country institutions. The Bangladeshi people who are the subject of this research, and who are most directly affected by its findings and its failures, have historically had very little influence over what research is done, how it is done, or how results are communicated. The science journalist who is aware of this structural inequality will approach international scientific research about Bangladesh with a combination of appreciation for its genuine contributions and critical awareness of its limitations and potential distortions.

3.2 Social Construction and Its Discontents

The sociology of scientific knowledge (SSK), associated particularly with Barry Barnes, David Bloor, Harry Collins, and the "strong programme" at the University of Edinburgh, argues that the content of scientific knowledge, not just the social processes of its production, is shaped by social factors. This is a controversial position that has generated fierce debate within both philosophy and science studies. Critics, including many practicing scientists, argue that the strong programme relativizes scientific knowledge in ways that make it impossible to distinguish good science from bad, genuine discovery from ideological fabrication, and that it provides intellectual ammunition to those who want to deny the reality of climate change, evolution, or vaccine safety.

The defenders of the strong programme respond that they are not denying that there is a physical world that constrains what scientists can credibly say: they are pointing out that the selection, interpretation, and communication of scientific findings is always a socially embedded process, and that pretending otherwise does a disservice both to scientific self-understanding and to public engagement with science. This is a position that science journalists can appreciate without committing to all of the strong programme's more controversial epistemological claims. The science journalist who understands that peer review is a social process, that funding sources shape research agendas, that scientific communities have internal politics and power hierarchies, and that the public communication of science is always shaped by the interests and frameworks of the communicators is a more sophisticated and more effective journalist than one who treats science as a simple and unmediated delivery of truth.

The "science wars" of the 1990s, in which natural scientists including Alan Sokal launched polemical attacks on the social constructivist tendencies in science studies, were partly genuine intellectual disputes about epistemology and partly territorial disputes about who had the authority to speak about science. Sokal's famous hoax, in which he published a deliberately nonsensical article in a social studies of science journal, was intended to demonstrate that the journal's editors were so committed to certain fashionable theoretical positions that they would accept incomprehensible gibberish as long as it used the right theoretical language. The hoax was genuinely revealing about some tendencies in academic science studies, but it was also widely misused as a rhetorical weapon against all critical analysis of scientific institutions.

For the Bangladeshi science journalist, the lessons of the science wars are both methodological and political. Methodologically, they suggest the value of intellectual honesty about the limits of one's own disciplinary frameworks. Politically, they illustrate how epistemological debates can

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be appropriated for purposes that have little to do with their original intellectual content. The pharmaceutical industry's attempts to dispute the science of drug safety, the tobacco industry's decades-long campaign to manufacture uncertainty about the health effects of smoking, and the fossil fuel industry's systematic distortion of climate science have all drawn, with varying degrees of sophistication, on the language of epistemological humility and scientific uncertainty. The science journalist who has some grounding in the actual arguments of the philosophy of science is better equipped to distinguish genuine uncertainty from manufactured doubt.

3.3 Risk Communication and the Public Understanding of Uncertainty

One of the most practically important areas of intersection between the philosophy of science and science journalism is the theory and practice of risk communication. Scientific research almost always involves uncertainty: about the magnitude of effects, about the generalizability of findings, about the long-term consequences of actions or exposures, and about the appropriate frameworks for evaluating tradeoffs between different types of risk and benefit. Communicating this uncertainty honestly to a general public is genuinely difficult, and there are serious debates within both science journalism and risk communication scholarship about how it should be done.

The traditional approach to risk communication, associated with the quantitative risk assessment framework that developed in the United States after the Three Mile Island nuclear accident, treats risk as an objective, measurable quantity that experts calculate and then communicate to the public. In this framework, public concern about risks that experts calculate as small is a problem of irrational public perception that needs to be corrected through better communication. The public's fears about nuclear power, genetically modified organisms, or electromagnetic fields, if they exceed what experts calculate as the "real" risk level, are a form of irrationality that science communication should remedy.

This framework has been extensively and convincingly criticized. Paul Slovic's research on risk perception has shown that the public's evaluation of risks is not simply irrational but reflects a set of considerations, including the voluntariness of exposure, the controllability of the risk, the equity of the distribution of risks and benefits, and the trustworthiness of the institutions managing the risk, that are not captured in quantitative risk estimates and that are by no means unreasonable to care about. The person who is more concerned about the risk of nuclear power than about the risk of riding a motorcycle is not necessarily making an error in probability assessment: she may be correctly perceiving that nuclear power involves a more equitable distribution of risks and benefits, a less controllable hazard profile, and less trustworthy institutional management than motorcycle riding.

For science journalism in Bangladesh, the risk communication literature has specific and urgent implications. Bangladesh faces an extraordinary array of environmental and technological risks: natural hazards including cyclones, floods, and riverbank erosion that are being intensified by climate change; industrial hazards including chemical exposure in garment factories and tanneries, arsenic in groundwater, and heavy metal contamination from e-waste processing; public health risks including the emergence and re-emergence of infectious diseases, the challenges of antimicrobial resistance, and the growing burden of non-communicable diseases

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associated with urbanization and changing diets; and food safety risks including pesticide residues, adulteration of processed foods, and the risks associated with new agricultural technologies.

Communicating about these risks honestly and usefully to a diverse public is one of the most important and most challenging tasks of science journalism in Bangladesh. It requires an understanding of the relevant science, an awareness of the ways in which risk estimates can be both calculated and communicated in misleading ways, a sensitivity to the specific social and cultural contexts in which risk communication is received, and a commitment to the interests of the most vulnerable communities, who typically bear the greatest risks while having the least ability to protect themselves or to influence the decisions that create the risks.

Chapter Four: The Jurisprudential Framework - Law, Power, and the Science Journalist in Bangladesh

4.1 Constitutional Foundations and Their Contradictions

The legal framework within which science journalists operate in Bangladesh is complex, contradictory, and constantly evolving. It begins with the Constitution of the People's Republic of Bangladesh, adopted in 1972, which provides the fundamental normative framework for press freedom and freedom of expression, and extends through a thick layer of legislation, regulation, case law, and administrative practice that both enables and constrains journalistic activity.

Article 39 of the Constitution guarantees freedom of thought, conscience, and speech. It explicitly recognizes the right of every citizen to freedom of speech and expression and freedom of the press. These are stated as fundamental rights, which means they are justiciable: a citizen can go to court to enforce them against the state. However, Article 39 also contains a significant qualification: the freedoms it guarantees are subject to "reasonable restrictions imposed by law in the interests of the security of the State, friendly relations with foreign states, public order, decency or morality, or in relation to contempt of court, defamation or incitement to an offence." This qualification is broad enough that it has provided the legal foundation for successive governments to justify extensive restrictions on press freedom.

The tension between the constitutional guarantee and the constitutional qualification is not unique to Bangladesh: it reflects a genuinely difficult philosophical and political question about the proper relationship between free expression and other social goods. But in the Bangladeshi context, this tension has been systematically resolved in favor of restriction, with courts generally deferential to executive claims about the necessity of limiting press freedom in the interests of security or public order. The result is a constitutional regime in which the formal guarantee of press freedom is real enough to provide a basis for legal advocacy and political argument, but insufficient to provide effective protection against a government determined to use the law as a tool of suppression.

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The Supreme Court of Bangladesh has on various occasions interpreted Article 39 in ways that are relevant to science journalists. Cases involving the right of journalists to access government information, the scope of the official secrets laws, the parameters of permissible publication about sub judice matters, and the extent of the state's power to compel disclosure of journalistic sources have all turned on the interpretation of Article 39 and its relationship to other constitutional provisions. The jurisprudence in this area is neither consistent nor always protective of journalistic independence, and the science journalist who understands it is better equipped to navigate its complexities.

The constitutional protection of freedom of expression is also relevant to science journalism through Article 31, which guarantees the right to protection of law, and Article 32, which protects the right to life and personal liberty. The Supreme Court of Bangladesh has developed a doctrine, drawing on interpretive approaches similar to those used by the Supreme Court of India, that treats the right to life as including the right to live with dignity, and this broader understanding of the right to life has been used in some cases to protect access to information that is essential for the enjoyment of other rights. For science journalists covering public health, environmental safety, and food security issues, this constitutional dimension is potentially significant.

4.2 The Legislative Architecture of Press Regulation

The legislative framework for press regulation in Bangladesh is built on several layers of historical legislation, colonial-era statutes modified for the post-independence context, and more recently enacted laws that reflect the specific concerns of each successive government.

The Printing Presses and Publications (Declaration and Registration) Act of 1973, enacted shortly after independence, established the basic framework for the registration and regulation of newspapers and other publications. This Act requires newspapers to be registered with the government, to provide a declaration of ownership and management, and to comply with various administrative requirements. While the registration requirement is not inherently incompatible with press freedom, it creates an administrative mechanism that governments have used to exert pressure on media organizations by threatening to revoke or withhold registration.

The Official Secrets Act of 1923, inherited from the colonial period and never substantially amended in Bangladesh, creates broad criminal liability for the disclosure of information that is classified as a state secret. This legislation is particularly problematic for science journalists. Much of the scientific and technical information relevant to public interest reporting, including data on environmental contamination from government-owned industries, the results of safety inspections of food and drug manufacturing facilities, and the scientific assessments underlying environmental impact statements for infrastructure projects, is held by government agencies and may be classified as official information under the Act. The Official Secrets Act 1923 puts restrictions on journalists especially those working on public interest issues. ARTICLE 19

The 2009 Right to Information Act represents a genuinely important addition to the legislative framework, providing a legal mechanism through which journalists and citizens can formally

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request information from public bodies. The 2009 Right to Information Act mandates public access to all information held by public bodies and overrides secrecy legislation. Although it has been unevenly implemented, journalists and civil society activists have had some success in using it to obtain information from local governing authorities. Freedom House For science journalists, the RTI Act is a potentially powerful tool for obtaining scientific data, research reports, safety assessments, and regulatory records that government agencies would otherwise not disclose. In practice, however, its use has been limited by bureaucratic resistance, the lack of effective enforcement mechanisms, and the specific exemptions that the Act provides for information classified as affecting national security or state interests.

4.3 The Digital Security Act and Its Successors: A Jurisprudential Analysis

The DSA of 2018 deserves detailed jurisprudential analysis because it represents the most significant recent attempt to create a legal framework for regulating online expression in Bangladesh, and because its provisions had an extraordinary impact on the practice of science journalism in the country.

The DSA was enacted ostensibly to address cybercrime, digital fraud, and online threats to national security and public order. But its provisions were drafted with extraordinary breadth and vagueness, and they were used in ways that had little to do with the stated purposes of the legislation. The DSA had few safeguards against meritless cases and gave the police nearly unfettered ability to arrest journalists or seize their devices without a warrant. Cfj

From a jurisprudential standpoint, the DSA raised several fundamental issues about the relationship between legislation, fundamental rights, and the rule of law. The principle of legality, which is foundational to the rule of law in liberal political theory, requires that criminal laws be sufficiently clear and precise that citizens can understand what conduct is prohibited and plan their behavior accordingly. The DSA's broadly worded prohibitions on content that "damages the image of the state," "creates confusion," or is "offensive to religion" failed this test. As implemented, they created a zone of legal uncertainty within which almost any critical journalism was potentially criminal, not because the law actually prohibited it but because it could be interpreted to prohibit it in the context of a criminal prosecution.

The DSA's procedural provisions were equally problematic. The law authorized warrantless arrest and search by police officers, mandatory detention pending bail applications, and bail refusal in certain categories of cases. These procedural features meant that even a journalist who was ultimately innocent of any offense could be detained for extended periods, subjected to interrogation, and have her equipment seized, effectively silencing her even without a conviction. This is a characteristic feature of what the jurisprudential literature calls "process as punishment": the use of legal proceedings themselves as a tool of harassment and deterrence, regardless of their ultimate outcome.

Weaponized legalism describes the systematic deployment of formally legal procedures to suppress fundamental rights while maintaining the appearance of constitutional governance. Drawing on Ran Hirschl's theory of abusive constitutional borrowing and Tamir Moustafa's

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analysis of constitutional capture in authoritarian contexts, weaponized legalism extends these frameworks to transitional democracies specifically, operating through nominally legal authorization, substantive illegality, and selective enforcement: laws ostensibly of general applicability are selectively deployed against journalists and opposition figures. Oxford Human Rights Hub

The DSA's successor, the Cyber Security Act of 2023 (CSA), was presented as a reform but retained most of the DSA's most problematic provisions. A few months before the national elections on 7 January 2024, Sheikh Hasina's government introduced the Cyber Security Act, described as a poor copy of the Digital Security Act, one of the world's most draconian laws for journalists. Reporters Without Borders The subsequent Cyber Security Ordinance of 2025, adopted by the Yunus interim government, was more genuinely reformist, but it retained vaguely worded provisions, particularly Section 26, which criminalizes publishing content that is related to any religion or communal hate speech and creates anxiety, that could still be used to suppress speech. Cfj

For science journalists, the specific implications of these laws are considerable. A journalist who reports on the health effects of industrial pollution in a factory district might be accused of "creating anxiety" or "damaging the image" of the relevant industry or the government that regulates it. A journalist who reports on the scientific evidence for the risks of a particular pesticide might be accused of undermining the agricultural sector. A journalist who reports on the failure of a government public health program might be accused of spreading misinformation about government performance. These are not hypothetical scenarios: they are the kinds of prosecutions that were actually brought, or threatened, against Bangladeshi journalists under the DSA and CSA.

4.4 International Human Rights Law and Its Bangladeshi Application

Bangladesh is a signatory to the International Covenant on Civil and Political Rights (ICCPR), which guarantees freedom of expression in Article 19. Under international human rights law, restrictions on freedom of expression must meet a three-part test: they must be provided by law, they must pursue a legitimate aim, and they must be necessary and proportionate in a democratic society. This test is significantly more demanding than the constitutional standard applied by Bangladeshi courts, and it provides an important external benchmark against which Bangladeshi press law can be evaluated.

Despite formal legal authorization in many prosecutions of journalists under the interim government, charges violated international human rights standards established in ICCPR Article 19(3) and UN Human Rights Committee General Comment 34. Oxford Human Rights Hub General Comment 34, adopted by the UN Human Rights Committee in 2011, provides detailed guidance on the requirements of Article 19, including the principle that restrictions on expression must be strictly construed and that broad, vague provisions are incompatible with the Covenant.

The jurisprudential significance of Bangladesh's international human rights obligations for domestic press law has been a contested question. Bangladeshi courts have generally been

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reluctant to directly apply international treaty standards in cases involving fundamental rights, preferring to rely on domestic constitutional interpretation. However, the Supreme Court has in some cases drawn on international human rights principles as aids to constitutional interpretation, and advocacy organizations have successfully used international standards as political and rhetorical tools even when they have not been directly applicable as legal standards.

The concept of "prior restraint," which is the prohibition of publication before it occurs rather than the punishment of publication after the fact, deserves specific attention in the Bangladeshi context. Prior restraint is considered particularly inimical to press freedom under both international human rights law and the constitutional law of most democracies, because it prevents the public from receiving information rather than merely punishing the communicator. In Bangladesh, the government's power to block websites and to issue injunctions prohibiting publication of specific material raises serious prior restraint concerns. Bangladeshi authorities blocked 54 news websites, including opposition party's web portal and Al Jazeera, over security issues. On 1 June 2018, the government also blocked the online edition of the Daily Star newspaper. Wikipedia For science journalists who publish on digital platforms, the risk of website blocking creates a form of prior restraint that is particularly effective precisely because it can be implemented quickly and without the procedural formalities of court proceedings.

4.5 The Media Reform Commission and the Emerging Legal Landscape (2024-2026)

The Bangladesh Media Reform Commission, established by the interim government in November 2024, represents the most significant attempt in the country's history to systematically rethink the legal and institutional framework for journalism. Its recommendations, submitted in early 2025, addressed a wide range of issues including press freedom legislation, media ownership concentration, journalist safety, accreditation systems, and the regulation of digital media.

ARTICLE 19's recommendations to the Bangladesh Media Reform Commission highlighted necessary legal and policy reforms, including addressing the Official Secrets Act 1923, the Cyber Security Act 2023, the Printing Presses and Publications Declaration and Registration Act 1973, the Penal Code 1860, the Information and Communication Technology ICT Act 2006, and the Draft National Artificial Intelligence Policy 2024 which, if passed, would enable excessive surveillance, content regulation, and potential algorithmic biases that could suppress dissent and independent journalism. ARTICLE 19

The Draft National Artificial Intelligence Policy 2024 is particularly significant for the future of science journalism. As artificial intelligence systems are increasingly used in newsrooms for tasks including translation, data analysis, image processing, and content generation, questions about the regulation of these systems and their potential for both enabling and suppressing independent journalism are becoming increasingly urgent. The Bangladesh Media Reform Commission's engagement with these issues represents an attempt to ensure that the legal framework for press regulation keeps pace with technological change, but the outcome of this engagement remains uncertain as of the time of writing.

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On January 28, 2026, nearly a year following the submission of the Bangladesh Media Reform Commission's recommendations to strengthen the nation's media, the interim government abruptly released a draft ordinance to establish a National Media Commission, allowing only three days for public feedback and disregarding many of the MRC's findings. The proposed Media Commission was condemned by international media freedom organizations for violating Article 19 of the International Covenant. International Federation of Journalists

This episode illustrates a recurring pattern in Bangladeshi media reform: the gap between the promise of reform and its actual implementation, between the rhetoric of press freedom and the practice of press control. Understanding this gap, its causes, its consequences, and the conditions under which it might be overcome, is one of the most important tasks for anyone seeking to understand the political economy of science journalism in Bangladesh.

Chapter Five: The Political Economy of Science Journalism in Bangladesh

5.1 Media Ownership, Concentration, and Editorial Independence

The political economy of science journalism in Bangladesh cannot be understood without a careful analysis of the structure of media ownership and the ways in which ownership shapes editorial content. The theoretical framework here draws on critical political economy of communication, particularly the work of Edward Herman and Noam Chomsky, whose "propaganda model" (1988) argued that the mass media in capitalist societies systematically serve the interests of the powerful through a set of structural "filters" that determine what information reaches the public.

Herman and Chomsky's five filters, adapted to the Bangladeshi context, provide a useful starting framework. The first filter is media ownership: the mass media are owned by corporations or wealthy individuals who have their own interests and who will not support journalism that seriously challenges those interests. The second filter is advertising: because media organizations depend on advertising revenue, they are vulnerable to pressure from advertisers who can withdraw support from publications whose editorial content they find inconvenient. The third filter is what Herman and Chomsky called "flak": the organized criticism and harassment that powerful institutions direct at media organizations and journalists who challenge them. The fourth filter is ideology: the shared frameworks of understanding within which journalists and editors operate, which shape what appears newsworthy and what appears as common sense. In the Bangladeshi context, one might add a fifth filter specific to the local political economy: the dependence of many media organizations on favorable regulatory treatment, government advertising, and the political connections of their owners.

Bangladesh's media credibility had eroded over the years, largely due to the concentration of ownership. During Hasina's tenure, many major media outlets were controlled by a few conglomerates that allegedly used them to curry favour with the government rather than serve the public interest. Al Jazeera Institute This pattern of ownership concentration and its consequences

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for editorial independence is not unique to Bangladesh: it characterizes media landscapes across the Global South. But it takes specific forms in Bangladesh that are particularly damaging to science journalism.

The owners of major Bangladeshi media organizations are typically conglomerate businessmen with interests spanning multiple industries, including garment manufacturing, real estate, banking, and import-export. These interests directly intersect with many of the most important science journalism beats: occupational health and safety in the garment sector, environmental regulation of real estate development, banking regulation and financial risk, and the science of trade policy and food safety. An owner who has significant investments in the garment industry will not be enthusiastic about a science journalism investigation that exposes the health consequences of chemical exposure in his factories. An owner who is developing real estate on environmentally sensitive coastal land will not welcome reporting on the scientific risks of that development for coastal ecosystems and communities.

The advertising market in Bangladesh creates additional pressures. The pharmaceutical industry, the garment industry, the agribusiness sector, and the real estate industry are all major advertisers in the Bangladeshi media. These are also among the most important subjects for critical science journalism. The structural conflict of interest created by this overlap between advertising relationships and journalistic subjects is not always decisive, but it creates systematic pressures toward self-censorship that are difficult to resist without strong editorial independence, which is itself rare in an environment of concentrated ownership and political dependence.

5.2 The Economics of the Science Journalism Profession

The science journalist in Bangladesh faces a set of economic constraints that are simultaneously causes and consequences of the profession's limited development. The most fundamental of these constraints is compensation. Bangladeshi journalists are, by international standards, very poorly paid. A staff journalist at a major national newspaper typically earns a monthly salary of between 15,000 and 40,000 taka, and science journalists do not command significant salary premiums over their colleagues covering other beats, despite the additional educational qualifications and specialized knowledge that effective science journalism requires. Journalists' professional standards are being adversely affected by inadequate salaries and benefits, and it is essential for the government to coordinate with media owners to establish a fair salary structure, secure working conditions, healthcare, retirement benefits, and workplace safety. ARTICLE 19

This economic reality has several consequences for the quality of science journalism. First, it makes it extremely difficult to attract and retain journalists with significant scientific education or background. A person who has completed a degree in biology, chemistry, or public health can earn substantially more in almost any other profession than in journalism, and the economic logic of choosing science journalism is therefore weak. The result is that most Bangladeshi science journalists have come to the beat through a general journalism background rather than a scientific one, which means they often lack the technical understanding necessary to critically evaluate scientific claims, interpret statistical evidence, or identify the significant gaps and limitations of the research they are covering.

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Second, the poor economic conditions of Bangladeshi journalism create incentives for the various forms of corrupt or compromised journalism that are euphemistically referred to as "envelope journalism" (receiving payments from sources), "paid news" (publication of stories in exchange for payment, without disclosure), and other practices that fundamentally compromise journalistic independence. These practices are by no means confined to science journalism, but they have specific consequences in the science domain. A science journalist who accepts payments from pharmaceutical companies, from pesticide manufacturers, or from other commercial interests with a stake in how scientific issues are reported is not just personally compromised: she is participating in a system of disinformation that can have direct and serious public health consequences.

Third, the economic vulnerability of Bangladeshi journalists makes them more susceptible to the legal harassment and career destruction that governments and powerful interests can deploy against critical reporting. A journalist who owns a house, who has children in school, and who has elderly parents to support is more vulnerable to the threat of legal prosecution or professional blacklisting than a more economically secure individual, and this vulnerability shapes what stories she will and will not pursue.

5.3 The Role of International Funding and Its Complications

Much of the institutional infrastructure that supports science journalism in Bangladesh, including training programs, fellowships, and the funding of nonprofit media organizations, depends on international funding from development agencies, private foundations, and international media organizations. This creates a complex and sometimes contradictory set of dynamics that the student of science journalism must understand.

On the positive side, international funding has made possible a number of important developments in Bangladeshi science journalism. Training programs funded by organizations including UNESCO, the British Council, and private foundations have provided Bangladeshi science journalists with exposure to international best practices, access to scientific literature and research networks, and opportunities to develop the technical skills necessary for effective science reporting. Fellowship programs have allowed selected journalists to spend time at international research institutions or in the newsrooms of leading international media organizations, gaining experience that they could not acquire in the Bangladeshi media environment. Funding for nonprofit investigative journalism organizations has created spaces for the kind of sustained, resource-intensive investigation that commercial media organizations are generally unwilling or unable to support.

On the negative side, international funding creates dependencies and potential distortions of its own. International funders have their own priorities, their own frameworks for understanding what constitutes good journalism, and their own assumptions about what issues are most important for Bangladeshi audiences. These priorities may not perfectly align with the priorities of Bangladeshi journalists, their audiences, or the public interest as understood from within Bangladesh. The international human rights framework, for instance, while genuinely important, may sometimes emphasize individual rights in ways that underplay collective or structural

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dimensions of scientific problems. The emphasis on "investigative journalism" in international media development programs may undervalue forms of science communication, including explanatory journalism, service journalism, and community-based reporting, that are also important and that may be more appropriate to some segments of the Bangladeshi media landscape.

The question of who controls the agenda of Bangladeshi science journalism, whether it is set by local journalists in response to local needs or by international funders in response to their own frameworks and priorities, is a contested and politically charged one. Critics from within Bangladesh, including some of the most experienced and respected journalists in the country, have raised concerns about what they describe as a neocolonial dimension of international media development programs: the assumption that international institutions know what good journalism looks like and that the task of such programs is to bring Bangladeshi journalism up to international standards, rather than engaging with the specific local conditions, cultural contexts, and public interest needs that shape what good journalism in Bangladesh should look like.

5.4 NGOs, Civil Society, and the Science Journalism Ecosystem

The nongovernmental sector in Bangladesh plays a particularly important role in the ecosystem of science journalism. Bangladesh has an extraordinarily rich and well-developed NGO sector, which includes some of the most sophisticated and effective development organizations in the Global South. BRAC, Grameen Bank, and a host of smaller organizations work on issues including health, agriculture, climate adaptation, environmental management, and technology access, all of which are important subjects for science journalism. These organizations produce substantial amounts of research and information, and they have significant resources and communications capacities that shape how scientific issues are presented to Bangladeshi audiences.

The relationship between science journalism and the NGO sector is complicated. NGOs are not neutral: they have organizational interests, donor relationships, and policy agendas that shape the research they conduct and the way they communicate their findings. The science journalist who takes NGO-produced research and information at face value, without critically examining the organizational interests and methodological assumptions that shape it, is not doing independent journalism. But the NGO sector also provides access to communities and perspectives that would otherwise be very difficult for journalists to reach, and its research often represents some of the best available science on issues of direct importance to the Bangladeshi public.

The specific case of climate change and climate adaptation illustrates this complexity. The scientific evidence for anthropogenic climate change is overwhelming, and Bangladesh is among the countries most severely and immediately affected by its consequences. The NGO sector, including international organizations like the International Centre for Climate Change and Development (ICCCAD) based in Dhaka, produces important research on climate impacts, adaptation strategies, and the specific vulnerabilities of Bangladeshi communities. This research is essential for informed science journalism on climate issues, and the NGO sector provides both the information and the community access that makes such journalism possible.

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At the same time, the climate change funding ecosystem is complex, and different NGOs and research institutions within it have different positions on contested questions, including the appropriate technology choices for Bangladesh's energy transition, the role of loss and damage compensation in climate finance, and the relative merits of different adaptation strategies. The science journalist who simply reports the NGO consensus position on these contested questions, rather than engaging with the genuine scientific and policy debates within the field, is not serving her audience well.

Chapter Six: The Inner Life of Science Journalism - Consciousness, Conscience, and Professional Identity

6.1 The Formation of the Science Journalist's Professional Self

The development of a professional identity as a science journalist is not merely a matter of acquiring technical skills and institutional accreditation. It involves a process of intellectual, ethical, and in many cases political formation that is profoundly shaped by the specific circumstances of the individual journalist, the institutional contexts in which she works, and the broader social and political environment of her country.

The student of science journalism needs to understand this formative process, partly because she is herself undergoing it and partly because it is directly relevant to the quality and character of the journalism she will eventually produce. The choices that a science journalist makes about which stories to pursue, how to frame them, whose voices to include and whose to ignore, what level of technical detail is appropriate for her audience, and how to navigate the conflicts between her professional obligations and the pressures of institutional power, are all shaped by the values, habits of mind, and professional frameworks that she has developed over the course of her formation as a journalist.

In Bangladesh, the formation of science journalists is shaped by several specific contextual factors. The educational system, which has historically placed limited emphasis on scientific literacy and critical thinking at the secondary and undergraduate level, means that many aspiring science journalists arrive at the profession without the scientific background that would ideally equip them for the work. The journalism education system, which has expanded significantly in recent decades but remains variable in quality and often disconnected from professional practice, provides some theoretical foundation but limited practical experience in science-specific reporting.

The professional culture of Bangladeshi journalism, which has been shaped by decades of political pressure, economic constraint, and the institutionalization of various forms of compromised practice, creates a set of norms and expectations that can powerfully shape the behavior of new entrants to the profession. The new science journalist who enters a newsroom and finds that her colleagues routinely accept invitations to science conferences sponsored by pharmaceutical companies, or that the science page is substantially written from press releases

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sent by corporate public relations departments, or that critical reporting on powerful commercial interests is routinely killed by editors who fear advertiser retaliation, is receiving a powerful socialization into a set of practices that are deeply problematic from the standpoint of independent journalism but that have become the default in a compromised professional environment.

6.2 The Psychology of Self-Censorship

Self-censorship is among the most important and least studied phenomena in the sociology of Bangladeshi journalism. While formal censorship, the direct government prohibition of specific publications, is highly visible and relatively easy to document and analyze, self-censorship operates invisibly, in the minds of individual journalists, and its effects are therefore much harder to measure or resist.

Self-censorship by journalists was rampant, with critical reporting on the interim leaders' alleged ties to extremist groups or economic mismanagement inviting swift retribution. International Federation of Journalists This observation, made in 2025-2026, describes a pattern that has characterized Bangladeshi journalism throughout its post-independence history. The specific targets of self-censorship change with the political landscape, but the underlying psychological and institutional dynamics remain constant.

From a psychological standpoint, self-censorship is a rational response to a threatening environment. When a journalist knows, either from direct experience or from observing what has happened to her colleagues, that certain kinds of reporting result in legal prosecution, physical assault, professional blacklisting, or economic retaliation, the rational response is to avoid those kinds of reporting. This is not cowardice, at least not in any simple moral sense: it is an adaptive response to a genuine threat. The problem is that self-censorship, which is individually rational, is collectively disastrous. When a whole profession systematically avoids certain categories of reporting, the result is a systematic distortion of the public's understanding of its own situation: an ignorance that is manufactured, maintained, and exploited by those who benefit from it.

The phenomenology of self-censorship is also worth understanding. It is rarely experienced as a conscious decision to suppress information. More commonly, it operates through a set of habituated judgments about what is and is not newsworthy, what is and is not a responsible story to pursue, and what is and is not the appropriate time and place to publish sensitive information. The science journalist who does not investigate the chemical exposure in a factory district may tell herself, and may genuinely believe, that the story lacks sufficient evidence, that her editor has other priorities, that the timing is not right, or that the public is not ready for the complexity of the issue. She may not acknowledge, even to herself, that the real reason is the calculated assessment, possibly unconscious, that this story would create serious problems for the people who control her career.

Understanding self-censorship as a systemic phenomenon rather than an individual moral failing is crucial for thinking about how it can be addressed. Individual courage is necessary but insufficient. The science journalist who resolves to resist self-censorship without institutional

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support, legal protection, and a supportive professional culture faces a very high probability of personal harm and professional failure. Reducing self-censorship requires changing the institutional environment: protecting journalists from legal harassment, providing economic security that reduces vulnerability, creating solidarity networks that support journalists facing retaliation, and developing professional norms that celebrate rather than penalize the journalist who takes the risks necessary for important journalism.

6.3 The Ethical Architecture of Science Journalism

The ethics of science journalism is a field of ongoing debate that intersects with the broader ethics of journalism, the specific professional ethics of scientific practice, and the philosophical ethics of public communication. The student of science journalism needs to engage seriously with this debate, both to develop her own ethical framework and to understand how the profession as a whole navigates the conflicts and tensions that arise in the course of actual journalistic work.

The dominant tradition in journalism ethics in the Anglo-American world has been a combination of libertarian and utilitarian frameworks: a commitment to press freedom as a fundamental value (libertarian) combined with a consequentialist evaluation of journalistic practices in terms of their contribution to the public good (utilitarian). This combination produces a general commitment to truth-telling, to independence from institutional interests, to accountability for the powerful, and to service to the public's need for information. These principles are widely shared across different national journalism cultures, and they are reflected in the codes of ethics of major international journalism organizations.

But these principles are also contested and require interpretation in specific contexts. The principle of truth-telling is complicated by the genuine uncertainty of scientific knowledge and by the difficulty of distinguishing between what is known, what is uncertain, and what is unknown. The principle of independence is complicated by the economic structures of media that create systematic dependencies and conflicts of interest. The principle of accountability is complicated by the power asymmetries that make it genuinely dangerous for journalists in some contexts to hold powerful institutions accountable. And the principle of public service is complicated by the diversity of publics and the question of whose interests should take priority when they conflict.

In the Bangladeshi context, the ethics of science journalism is further complicated by the specific features of the local media environment. The practice of "paid news," in which individuals or organizations pay to have favorable stories published without disclosure, is widespread in Bangladeshi journalism and extends to science-related coverage. A pharmaceutical company that wants to promote a new drug, a cosmetics company that wants to promote a "natural" ingredient that has dubious health claims, or an agricultural company that wants to promote a new pesticide, can often secure favorable coverage by making payments to journalists or editors. This is not secret: it is well known within the profession, and it creates a general climate of skepticism about media coverage that paradoxically undermines the credibility of even genuinely independent journalism.

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The concept of transparency, which is increasingly emphasized in international journalism ethics as a response to public skepticism about media credibility, is particularly relevant in this context. The science journalist who discloses her funding sources, her potential conflicts of interest, and the methodological choices she has made in her reporting is doing something that is both ethically important and practically effective in building public trust. But transparency requires institutional support: a media organization that is itself financially dependent on the subjects it covers cannot credibly commit to full transparency about those dependencies.

6.4 Adulthood, Maturity, and the Professional Gaze

The concept of "adulthood" in professional journalism has a specific meaning that goes beyond chronological age. It refers to the development of a mature professional judgment that can navigate complexity without retreating into either naive optimism or cynical nihilism. The mature science journalist has confronted the tensions and contradictions of her profession and has developed a way of working that is honest about its limitations while still committed to making the best possible contribution to the public understanding of science.

This professional maturity requires several specific intellectual and psychological capacities. It requires the ability to hold uncertainty and complexity without the need to resolve them prematurely into simple narratives. Scientific research is almost always more uncertain, more provisional, and more contextually qualified than the simple declarative statements that journalism typically demands. The mature science journalist can communicate this complexity without either overwhelming her audience with caveats or falsifying the science by overclaiming certainty. This is one of the most difficult balancing acts in science journalism, and it requires both deep familiarity with the relevant science and sophisticated skill in communicating to a general audience.

Professional maturity also requires the ability to distinguish between different kinds of controversy. Not all controversy in science is of the same kind. Some scientific questions are genuinely open: the evidence is insufficient, the methodological challenges are severe, and expert opinion is genuinely divided. Some questions that appear controversial are actually settled within the scientific community but are contested publicly by interests that benefit from manufacturing doubt. And some questions are genuinely controversial not in the scientific sense but in the political and ethical sense: there is scientific consensus on the facts but genuine disagreement about the values, priorities, and tradeoffs that should govern the policy response. The mature science journalist can identify which kind of controversy she is dealing with and can communicate appropriately about each kind.

Chapter Seven: Theories of Science Communication and Their Application to the Bangladeshi Context

7.1 The Deficit Model and Its Critique

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The dominant framework for thinking about science communication for most of the twentieth century was what became known as the "deficit model": the idea that public attitudes toward science are primarily a function of how much scientific knowledge people have, and that the task of science communication is to fill the deficit of knowledge in order to produce more positive and more rational public attitudes. This model has been extensively critiqued and largely abandoned in the academic science communication literature, but it continues to exercise considerable influence in actual practice, including in Bangladesh.

The deficit model has intuitive appeal. If people are skeptical about vaccination, surely providing them with accurate information about vaccine safety and efficacy will reduce their skepticism. If people are resistant to adopting improved agricultural varieties, surely providing them with evidence of the varieties' performance will change their minds. If people are skeptical about climate change, surely providing them with the scientific evidence will produce acceptance and support for climate policy. The difficulty is that decades of research in science communication, health communication, and political psychology have consistently failed to support these intuitions. Information provision alone does not reliably change attitudes or behaviors on contested science-related issues.

The reason for this failure is complex and has been the subject of substantial research. One part of the answer, developed in the work of Dan Kahan at Yale, is that human reasoning about scientific evidence is heavily influenced by cultural identities and group affiliations. People tend to accept scientific evidence that supports the worldview of groups they identify with and reject evidence that challenges it, and this pattern holds regardless of their level of scientific knowledge. In fact, Kahan's research has found that higher scientific literacy is associated with greater ability to marshal evidence in support of pre-existing beliefs, so that more knowledgeable individuals are, in some contexts, better at rationalizing resistance to inconvenient science.

Another part of the answer, developed in the risk communication literature, is that people's responses to scientific information about risk are shaped by a range of factors beyond objective risk assessment, including the perceived voluntariness of the exposure, the sense of control over the risk, the distribution of benefits and burdens, and above all the trustworthiness of the institutions that communicate the information. In Bangladesh, where institutional trust is consistently low and where the history of government, corporate, and scientific institutional failure is extensive and well-remembered, this factor is particularly important. The person who has seen her community repeatedly misled by government officials, exploited by corporations, and ignored by scientists who parachuted in, collected their data, and left without sharing their findings or engaging meaningfully with local needs, has rational grounds for skepticism that cannot be overcome by simply providing more information.

7.2 The Contextual and Lay Expertise Models

In response to the failures of the deficit model, science communication scholars have developed alternative frameworks that give more weight to the social context in which science communication occurs and to the knowledge and expertise that non-scientists bring to their engagement with scientific issues.

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The contextual model, associated with work at Edinburgh and later at the Wellcome Trust in the UK, argues that public responses to science are best understood as contextually embedded judgments in which prior knowledge, cultural frameworks, social identities, institutional trust, and specific local circumstances all play important roles. The implication for science communication is that effective engagement with publics requires understanding their specific contexts: what they already know, what frameworks of understanding they bring, what institutions they trust and distrust, and what specific concerns and interests shape their engagement with scientific issues.

The lay expertise model goes further, arguing that non-scientists often have specialized knowledge about their own circumstances, environments, and experiences that is directly relevant to scientific questions and that is not adequately recognized by formal scientific institutions. The Cumbrian sheep farmer who knows in extraordinary detail how the fallout from Chernobyl is distributed across his specific landscape, which is quite different from the distribution assumed by the government's general model, is not ignorant: he has genuine expertise, derived from direct experience, that is more accurate and more relevant to his specific situation than the generic model. Similarly, the Bangladeshi farmer who has observed over decades how her specific plot of land responds to flooding, to drought, to different crop varieties, and to changing pest pressures, has knowledge that formal agricultural science has typically ignored but that is directly relevant to the design of effective adaptation strategies.

For science journalism in Bangladesh, the contextual and lay expertise models suggest a radically different approach to science reporting than the deficit model. Instead of starting from the scientific literature and asking how its findings can be communicated to the public, the science journalist who takes these models seriously starts from the communities most directly affected by scientific issues and asks what they know, what they need to know, and how formal science can be made relevant and useful to their specific situations. This is a genuinely more demanding approach: it requires the journalist to invest time in community engagement, to develop the cultural and linguistic competence necessary to understand and represent diverse local knowledge systems, and to resist the institutional pressures of a media environment that rewards quick, source-based reporting over the slower, more labor-intensive work of genuine community engagement.

7.3 Framing Theory and Its Applications to Science Journalism

Framing theory, developed in communication studies from the sociological foundations laid by Erving Goffman, holds that the way an issue is framed, the conceptual structure within which it is presented, profoundly shapes how audiences understand and respond to it. Frames determine what aspects of an issue are emphasized and what are de-emphasized, what causal relationships are implied, who are identified as the relevant actors, and what are the appropriate responses or solutions.

The application of framing theory to science journalism has produced important insights. Matthew Nisbet's work on "framing science," in particular, has argued that different frames for the same scientific issue can reach different audiences and produce different patterns of public

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understanding and engagement. A climate change story framed in terms of economic risk will reach and resonate with different audiences than the same story framed in terms of ecological systems, social justice, or national security. A vaccination story framed as a matter of personal freedom will produce different responses than the same story framed as a matter of public health responsibility.

In the Bangladeshi context, the choice of frame for science stories is particularly consequential. Bangladesh's diverse population includes communities with very different cultural frameworks, economic situations, and relationships to institutions. The science journalist who frames climate change purely in terms of international scientific consensus and global policy may fail to reach the communities most directly affected by climate change, whose primary concern is not the international policy framework but the immediate and local consequences of flooding, salinity intrusion, and seasonal disruption. The journalist who frames agricultural science in terms of national food security may fail to engage with the specific concerns of marginal farmers whose primary interest is in the knowledge and resources that will help them manage the specific risks facing their specific plots of land.

The religious dimension of framing in Bangladesh deserves particular attention. Islam is the religion of approximately 90% of the Bangladeshi population, and Islamic frameworks for understanding nature, science, and human responsibility are a significant part of the cultural context in which science communication occurs. Some science journalists, influenced by a modernist and implicitly secular understanding of science, treat religious frameworks as irrelevant or hostile to scientific understanding. This is both intellectually wrong and practically counterproductive. The Islamic tradition has a sophisticated and evolving engagement with questions about the relationship between human knowledge and divine creation, about the proper use of natural resources, and about the responsibilities of humans toward the natural world. Science journalism that engages respectfully and intelligently with these frameworks, rather than dismissing them or avoiding them, is likely to be both more accurate and more effective in reaching the communities it seeks to serve.

7.4 The Public Sphere and Science Journalism

Jurgen Habermas's concept of the public sphere provides an important theoretical framework for understanding the role of science journalism in democratic society. For Habermas, the public sphere is a domain of social life in which something approaching public opinion can be formed: a space of communicative interaction in which citizens engage in rational-critical discourse about matters of common concern. The public sphere functions as a mechanism of democratic legitimacy: political decisions that are made in the light of genuine public deliberation are more legitimate than those made without it.

The science journalism has a crucial role to play in the public sphere: it is the primary mechanism by which scientific knowledge is made available for public deliberation on issues of common concern. But the actual functioning of the Bangladeshi public sphere falls far short of the Habermasian ideal in ways that directly affect the quality and character of science journalism. The conditions for genuine public deliberation, including equal access to

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information, freedom of expression, absence of coercive power, and the norm of reaching agreement through reasoned argument, are systematically undermined by the concentrated ownership of media, the legal constraints on free expression, the economic precarity of journalists, and the cultural and educational barriers that limit effective participation in public discourse.

Habermas himself acknowledged, in his later work, that the public sphere as he had initially theorized it was an idealization that never fully corresponded to historical reality, and that feminist, postcolonial, and cultural critics had identified important dimensions of exclusion and distortion that his earlier account had missed. The critical expansion of the public sphere concept to include subaltern counter-publics, alternative publics organized around identities and experiences that are marginalized in the dominant public sphere, is particularly relevant in Bangladesh. The communities most directly affected by environmental pollution, by occupational disease, by the consequences of climate change, by food insecurity, and by the inadequacies of the public health system are not adequately represented in the dominant Bangladeshi public sphere. Their knowledge, their experience, and their concerns are systematically underrepresented in the media, and the result is that the public deliberation about science and technology policy that does occur is systematically skewed toward the interests of the more powerful.

Chapter Eight: Specific Domains of Science Journalism in Bangladesh - Critical Surveys

8.1 Climate Science Journalism in a Delta Nation

Bangladesh is one of the countries most severely threatened by climate change, and this fact ought to make climate science journalism one of the most important and most developed areas of Bangladeshi science reporting. In practice, climate journalism in Bangladesh is a field of extraordinary contradictions: it has produced some genuinely important and internationally recognized work, and it has also been characterized by systematic failures of depth, independence, and critical analysis.

The specific geographic and demographic circumstances of Bangladesh make climate change simultaneously more visible and more complex here than in many other parts of the world. A country that is largely a river delta, that sits at the mouth of two of Asia's largest river systems, that faces the Bay of Bengal in an era of increasing cyclone intensity, and that has a coastline threatened by both sea-level rise and the subsidence of the delta itself, provides ample observable evidence of climate change's physical impacts. The science journalist who wants to find the story of climate change made concrete does not need to go far: the flooding of Sylhet in unprecedented seasons, the salinity intrusion into coastal agricultural land in Khulna, the riverbank erosion and displacement that affects char communities across the north, the changing patterns of monsoon rainfall that challenge generations of agricultural knowledge, all of these are stories that connect the abstract science of climate change to the immediate lived experience of millions of people.

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But telling these stories well requires more than observation and empathy. It requires an understanding of the climate science itself, including the complex dynamics of sea-level rise (which involves not just global mean sea level but local subsidence, gravitational changes, and changes in storm surge patterns), the dynamics of monsoon variability and its relationship to climate change, the science of delta geomorphology, and the complex interactions between upstream development (dams, irrigation projects, sand extraction) and the health of the downstream delta. It requires an ability to distinguish between weather events (floods that happen because of particular meteorological conditions this season) and climate trends (the long-term changes in the frequency and intensity of such events that are attributable to climate change). And it requires a critical understanding of the uncertainties in climate projections for specific regions, which are much greater than the uncertainties in global averages, and of the debates within climate science about the appropriate models and methodologies for projecting regional impacts.

The political dimensions of climate journalism in Bangladesh are also complex. Climate change is not just a scientific issue: it is a justice issue, and the justice dimensions are particularly salient in Bangladesh, which has contributed almost nothing to global greenhouse gas emissions but faces some of the most severe consequences. This justice frame is emotionally and politically powerful, and it is also scientifically grounded in the literature on climate attribution, which can now quantify the contribution of historical emissions from wealthy countries to specific climate impacts in vulnerable countries.

But the justice frame also creates temptations toward simplification and advocacy that can compromise journalistic standards. The science journalist who is committed to the justice frame may be less careful about distinguishing between what the science clearly shows and what is politically convenient, may underreport the genuine uncertainties in climate projections, and may fail to engage critically with the specific policies and institutions that claim to address climate justice but may actually serve other interests. Climate finance, for instance, is an area in which the gap between justice rhetoric and institutional practice is large, and the science journalist who accepts international climate finance claims uncritically is not serving either the truth or the interests of the vulnerable communities who are supposed to benefit.

8.2 Public Health Journalism: Between Advocacy and Independence

Public health science journalism in Bangladesh operates at the intersection of some of the most urgent human needs and some of the most powerful institutional interests. Bangladesh's public health challenges are enormous: the burden of communicable diseases including tuberculosis, malaria, dengue fever, and enteric diseases remains significant despite progress; the epidemiological transition toward non-communicable diseases including cardiovascular disease, diabetes, and cancer is accelerating; the threats from emerging infectious diseases, powerfully illustrated by the global COVID-19 pandemic, are genuine and ongoing; and the specific risks associated with Bangladesh's environmental circumstances, including arsenic contamination, industrial chemical exposure, and the disease consequences of flooding and climate change, are substantial.

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The COVID-19 pandemic, which began in early 2020 and continued to shape public health and media narratives through the following years, provides an important case study in Bangladeshi public health journalism. The pandemic tested the capacity, independence, and ethics of science journalism in Bangladesh in ways that both revealed genuine strengths and exposed serious limitations.

On the positive side, the pandemic produced some genuinely important science journalism in Bangladesh. Several reporters and news organizations provided sustained, substantive coverage of the science of the disease, including accurate explanations of epidemiology, transmission dynamics, and the development and testing of vaccines. Organizations including the Health Reporters Forum Bangladesh played an important role in coordinating coverage and sharing information among journalists, and the network of Bangladeshi public health researchers provided a community of expertise that journalists could draw on for reliable information.

On the negative side, the pandemic also exposed the depth of the institutional and structural problems facing Bangladeshi public health journalism. The government's management of pandemic-related information, including the release of case counts and death data, was at various points opaque, delayed, and inconsistent with independent estimates. Several journalists who published reports that challenged the official narrative or raised questions about the government's performance faced threats and harassment. The commercial pressures of the media environment created incentives for sensationalism, for the promotion of dubious treatments and remedies, and for the acceptance of paid content from pharmaceutical companies without adequate disclosure.

The pharmaceutical journalism beat in Bangladesh is particularly significant and particularly problematic. Bangladesh has a substantial domestic pharmaceutical industry, and it is also a major importer of pharmaceutical products from international sources. The regulation of pharmaceuticals, including the approval of new drugs, the enforcement of quality standards, and the monitoring of adverse effects, is managed by the Directorate General of Drug Administration (DGDA), which operates under significant political and commercial pressures. The science journalist who wants to report critically on pharmaceutical regulation is immediately in conflict with powerful commercial interests, with political patronage networks, and with an institutional culture that is hostile to scrutiny.

The history of pharmaceutical regulation controversies in Bangladesh provides multiple case studies in the challenges of science journalism in this domain. The contamination of paracetamol syrup with diethylene glycol in the early 1990s, which caused mass poisoning and death, was a story that raised fundamental questions about the adequacy of pharmaceutical regulation in Bangladesh. The subsequent history of drug regulation, while improved in some respects, has continued to be marked by controversies about the approval of substandard products, the adequacy of post-market surveillance, and the independence of the regulatory process from commercial influence. These controversies are directly relevant to public health and they require exactly the kind of sustained, technically informed, and institutionally critical journalism that is most difficult to do in the current Bangladeshi media environment.

8.3 Agricultural and Food Science Journalism

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Agriculture is the foundation of the Bangladeshi economy and the primary source of livelihood for a substantial portion of the population, though its share of GDP has declined as manufacturing and services have grown. The science of agriculture, including crop breeding, soil management, pest control, irrigation, and food processing, is directly relevant to the incomes, food security, and environmental circumstances of tens of millions of people. Agricultural science journalism in Bangladesh therefore has a potentially enormous social impact, and its current limitations are correspondingly significant.

The Bangladesh Rice Research Institute (BRRI), the Bangladesh Agricultural Research Institute (BARI), the Bangladesh Institute of Nuclear Agriculture (BINA), and a number of other public research institutions conduct and communicate agricultural research that has implications for national food security, the livelihoods of farmers, and the sustainability of agricultural systems. These institutions are important sources for science journalists, but they are also government agencies whose communications are shaped by institutional and political interests, and whose research agendas have not always been responsive to the needs of the most vulnerable farmers.

The Green Revolution, which involved the widespread adoption of high-yielding varieties of rice and wheat developed through international agricultural research, transformed Bangladeshi agriculture in the 1970s and 1980s, dramatically increasing food production and reducing the chronic food insecurity that had previously characterized the country. But the Green Revolution also had significant negative consequences, including increased dependence on chemical inputs, the displacement of traditional varieties and associated genetic diversity, the privileging of irrigated lowland agriculture over other farming systems, and the concentration of benefits among larger and more well-resourced farmers. Agricultural science journalism that engaged seriously with this history and its ongoing relevance to current agricultural science and policy decisions would be doing an important public service. In practice, agricultural coverage in the Bangladeshi media has tended to report government and research institution announcements uncritically, rather than engaging with the deeper debates about the direction and purpose of agricultural research.

The emergence of genetically modified organisms (GMOs) in Bangladeshi agriculture, particularly through the approval of Bt brinjal (eggplant), has created a significant case study in science journalism. The approval of Bt brinjal in Bangladesh in 2013 was a major policy decision that touched on a nexus of scientific, economic, political, and ethical issues. The science of Bt brinjal involves questions about the safety of the genetic modification for human health and the environment, the effectiveness of the insect resistance trait in the specific ecological conditions of Bangladesh, the economic consequences for farmers who adopt the technology, and the implications for seed systems and farmer autonomy. The policy context involves the role of international agricultural research institutions (Bt brinjal was developed in collaboration with the USDA and Monsanto), the influence of international development funding on Bangladeshi agricultural policy, and the competing claims of GMO advocates and critics, some of whom have genuine scientific concerns and some of whom are advancing broader political agendas.

The science journalism that surrounded the Bt brinjal approval was, in this author's assessment, generally inadequate to the complexity of the issues. Coverage tended to polarize around either

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pro-GMO or anti-GMO positions, often without adequate engagement with the specific scientific evidence for Bt brinjal's performance and safety, or with the specific economic and social context of Bangladeshi smallholder agriculture. The science journalist who could have done justice to this story would have needed to understand molecular biology, agricultural economics, science policy, and the history of the international agricultural research system: a combination of competences that very few Bangladeshi science journalists possess.

Chapter Nine: Controversies and Landmark Cases in Bangladeshi Science Journalism

9.1 The Arsenic Crisis Revisited: A Case Study in Science, Policy, and Journalistic Responsibility

The discovery and reporting of the arsenic contamination crisis in Bangladesh's groundwater provides one of the most extensive and analytically rich case studies in the history of Bangladeshi science journalism. It is a story that involves all of the major themes of this textbook: the relationship between scientific knowledge and institutional power, the role of journalism in holding institutions accountable, the challenges of communicating risk and uncertainty to diverse publics, the international dimensions of a domestic health crisis, and the ethical obligations of the science journalist when the interests of affected communities conflict with the interests of powerful institutions.

The basic facts of the arsenic story have been briefly introduced above. The geological reality, that naturally occurring arsenic is present at high concentrations in the aquifer sediments of the Bengal delta, had been known to geochemists since the 1970s, but its public health significance was not understood, or at least not acted on, by the institutions responsible for Bangladesh's water supply until the 1990s. The tube well program, which had been promoted as a response to the biological contamination of surface water and which had genuinely saved many lives from waterborne diseases like cholera and typhoid, had inadvertently replaced one set of health risks with another.

The sequence of events by which this information moved from the domain of scientific research to the domain of public knowledge and policy is a complex story involving both the contributions and the failures of science journalism. Dipankar Chakraborti and his colleagues at Jadavpur University in Calcutta were among the first to systematically document the scale of arsenic contamination and its health consequences in both West Bengal and Bangladesh, publishing their findings in the scientific literature in the early 1990s. International public health researchers, including Peter Ravenscroft and others working within the British Geological Survey and university research programs, contributed additional geological and epidemiological analysis.

The translation of this scientific finding into public and policy debate required science journalism, and some of the early coverage was responsible for significant advances in public awareness and in putting pressure on institutions to respond. But some of the coverage was also

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problematic, contributing to panic in affected communities by presenting worst-case estimates as certainties, creating confusion about which wells were and were not safe, and failing to adequately communicate the uncertainty in both the health risk estimates and the geographical distribution of contamination.

The institutional response to the arsenic crisis, or more precisely the inadequacy of that response, provided material for a different kind of science journalism: investigative journalism that held institutions accountable. UNICEF, which had been a major funder and promoter of the tube well program, was slow to acknowledge the problem and slower still to fund systematic testing of contaminated wells. The World Bank, which had also funded the program, was equally reluctant to engage with the implications of the crisis for its past investment decisions. The Bangladesh government, whose public health infrastructure was ill-equipped to respond to a problem of this scale and complexity, was also slow to develop and implement effective responses.

Journalists who investigated the institutional failures around the arsenic crisis were doing work of genuine public importance, but they were also challenging organizations with enormous economic and political power. The international development agencies in particular were not accustomed to being held accountable for the consequences of their programs by Bangladeshi journalists, and their response to critical coverage ranged from dismissive to actively obstructive.

9.2 Reporting on Industrial Disasters: The Rana Plaza Case and Beyond

The collapse of the Rana Plaza garment factory complex in Savar in April 2013, which killed 1,134 workers and injured more than 2,500 others, was the deadliest structural failure in the history of the textile industry and one of the worst industrial disasters in global history. It was also, from the perspective of science journalism, a case study in the intersection of structural engineering, occupational health science, regulatory failure, and the political economy of the global garment industry.

The Rana Plaza disaster was not a surprise to everyone. Structural engineers and building safety experts had been raising concerns about the quality of building construction and the adequacy of building safety regulation in Bangladesh's garment industry for years. The specific building that collapsed had been constructed in violation of multiple building codes, had been expanded by adding additional floors beyond its original design capacity, and had shown visible signs of structural distress on the morning of the collapse. Workers had been ordered back into the building despite their own concerns about its safety.

The science journalism around Rana Plaza, both before and after the disaster, illustrates several important themes. Before the collapse, there was very little science journalism in the Bangladeshi press about building safety, structural engineering standards, or the occupational health consequences of the physical conditions in garment factories. This was not because the issues were unknown: building safety experts, labor researchers, and occupational health scientists had documented problems extensively. It was because the garment industry is one of the most economically powerful sectors in Bangladesh, accounts for more than 80% of the country's export earnings, and has deep connections to the political and media establishment.

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Critical reporting about the industry was not encouraged, and self-censorship about garment industry issues was widespread.

After the disaster, the volume of coverage increased dramatically, but the quality was uneven. Some reporting was genuine and important: investigations of the regulatory failures that had allowed such unsafe construction, of the role of international buyers in creating supply chain pressures that incentivized cost-cutting at the expense of safety, and of the political connections that had allowed building code violations to go unpunished. Other coverage was superficial, sensationalist, or focused on individual criminal responsibility in ways that missed the systemic dimensions of the problem.

The structural engineering science relevant to the Rana Plaza case, including the analysis of why the building failed and what design and construction practices would prevent similar failures, received relatively little attention in the Bangladeshi press. This is partly a function of the limited number of Bangladeshi journalists with sufficient technical background to engage seriously with structural engineering, and partly a reflection of the more general tendency of Bangladeshi journalism to focus on political and personal narratives rather than technical and systemic analysis.

9.3 The Pandemic and Infodemic: COVID-19 Science Journalism in Bangladesh

The COVID-19 pandemic provided an extraordinary natural experiment in the capacity of Bangladeshi science journalism to serve the public interest under conditions of extreme urgency, scientific uncertainty, and intense political pressure. The analysis of pandemic-era science journalism in Bangladesh reveals both the genuine capabilities that the profession has developed and the deep structural limitations that constrain it.

Bangladesh detected its first confirmed COVID-19 cases in March 2020. The government's initial response was characterized by a combination of genuine public health measures (lockdowns, social distancing requirements, mask mandates) and significant informational failures (delayed and inconsistent reporting of case counts and deaths, contradictory guidance on protective measures, and suppression of reporting that challenged official narratives about the scale of the outbreak).

Science journalists faced multiple simultaneous challenges during the pandemic. The scientific understanding of the disease was itself evolving rapidly, with new findings about transmission dynamics, clinical outcomes, and the biology of the virus appearing in the scientific literature at an extraordinary rate. Much of this research was published as pre-prints, without the usual peer review process, creating a situation in which findings were sometimes widely reported before they had been adequately evaluated by the scientific community. The challenge of communicating the difference between a pre-print finding and a peer-reviewed finding to a general audience was significant, and the Bangladeshi science journalism community did not always handle it well.

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The political pressures on pandemic-era science journalism in Bangladesh were intense. The government was sensitive to any reporting that suggested failures of its pandemic response, and several journalists who published critical analysis of government data or policy faced legal threats under the DSA and CSA. The health ministry's daily briefings became the primary source for most media organizations, and the lack of independent verification capacity meant that official statistics were often reported without adequate critical context.

The infodemic, the parallel epidemic of misinformation, false remedies, and conspiracy theories that accompanied the COVID-19 pandemic globally, was a significant challenge for science journalists in Bangladesh. Misinformation about COVID-19 spread rapidly through social media, including claims about the efficacy of unproven treatments (ranging from homeopathic remedies to black seed oil), about the risks and effectiveness of vaccines, and about the origins and nature of the virus. Science journalists had an important responsibility to debunk this misinformation, but doing so effectively required not just factual accuracy but an understanding of why people were attracted to misinformation and what kinds of communication were likely to be persuasive in specific communities.

The vaccine journalism during the pandemic is a particularly important case. Bangladesh's vaccine rollout, which depended initially on the AstraZeneca vaccine produced by the Serum Institute of India and later on vaccines from China and other sources, was a major policy and public health story. The science journalism around vaccines needed to cover the efficacy and safety data for each vaccine, the comparative evidence on different vaccines, the challenges of vaccine supply chain and cold chain management, the specific issues raised by vaccine hesitancy in different communities, and the policy decisions about vaccine prioritization and distribution. This is an extraordinarily complex scientific and policy story, and the Bangladeshi science journalism community's engagement with it was uneven at best.

Chapter Ten: The Future Landscape - Theory, Technology, and Transformation

10.1 Digital Transformation and Science Journalism

The digital transformation of media is reshaping science journalism in Bangladesh in ways that are simultaneously liberating and threatening, creating new possibilities for public engagement and new vectors for misinformation, enabling new forms of accountability journalism and new tools for surveillance and censorship.

The internet and social media have dramatically lowered the barriers to entry for science communication in Bangladesh. A scientist who wants to communicate her research findings directly to a general audience no longer needs to convince a newspaper editor that the story is worth publishing: she can write a blog post, a Facebook note, or a Twitter thread. A community affected by environmental pollution no longer needs to persuade a journalist to cover their story: they can document their situation with a smartphone camera and share it on social media. These

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developments represent a genuine democratization of science communication that has important positive implications.

But the democratization of communication also means the democratization of misinformation. The same digital platforms that enable direct science communication also enable the rapid spread of scientifically false claims, manipulated data, and deliberately misleading content. The COVID-19 pandemic made viscerally clear the public health consequences of misinformation spread through social media, and the broader science misinformation problem, including misinformation about climate change, vaccines, and agricultural biotechnology, is a serious and growing challenge in the Bangladeshi context.

The implications of artificial intelligence for science journalism in Bangladesh are a subject of intense current debate. AI tools including large language models, automated translation systems, and AI-powered data analysis tools have the potential to significantly augment the capabilities of science journalists with limited technical resources. An AI that can translate scientific abstracts from English to Bangla, summarize technical reports, or identify statistical anomalies in large datasets could significantly extend what a resource-limited Bangladeshi science journalist can accomplish.

At the same time, AI systems can also be used to generate misinformation at scale, to create deepfakes of scientific authority figures, to manipulate images and data, and to produce synthetic scientific-sounding content that appears credible but is false. The Bangladesh Media Reform Commission's engagement with the Draft National Artificial Intelligence Policy 2024 reflects recognition that the governance of AI has important implications for the integrity of the information environment and the capacity of science journalism to function as a genuine public service.

The Draft National Artificial Intelligence Policy 2024, if passed, would enable excessive surveillance, content regulation, and potential algorithmic biases that could suppress dissent and independent journalism. ARTICLE 19 This concern about the governance of AI as a potential tool of censorship reflects a broader pattern in which technologies initially presented as tools of democratization and empowerment are subsequently captured by state and commercial interests and turned into tools of control.

10.2 Science Journalism and the Crisis of Trust

Perhaps the most fundamental challenge facing science journalism in Bangladesh, and indeed globally, is the crisis of trust. Trust in science, trust in scientists, trust in scientific institutions, trust in media, and trust in the public sphere itself have all declined in recent years, creating a communication environment in which even the most accurate and carefully crafted science journalism struggles to reach and persuade skeptical audiences.

In Bangladesh, this crisis of trust has specific historical roots. The experience of institutional failure, of governments that lied about famines and industrial disasters, of development agencies that caused mass poisoning through well-intentioned programs, of scientific institutions that

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served elite interests rather than public welfare, has created reasonable grounds for the deep skepticism that many Bangladeshis feel toward institutional authority of all kinds, including scientific authority. The science journalist who wants to communicate credibly in this environment must understand and engage with this skepticism, rather than dismissing it as ignorance or irrationality.

Building trust in science journalism requires a set of institutional and professional commitments that go beyond individual honesty and competence. It requires transparent disclosure of funding sources, conflicts of interest, and methodological choices. It requires genuine accountability mechanisms, so that when science journalism gets things wrong, there are processes for acknowledging and correcting errors. It requires investment in the relationships with communities that make it possible to communicate relevantly and respectfully with diverse audiences. And it requires structural reforms to the media environment that address the economic and political pressures that make genuinely independent science journalism so difficult.

The concept of "trustworthy science journalism" in the Bangladeshi context cannot be modeled simply on international best practices, important as those are. It must be developed from within the specific historical, cultural, and institutional circumstances of Bangladesh, in genuine dialogue with the communities that Bangladeshi science journalism is meant to serve. This is a generational project, and it requires commitment at every level: from individual journalists who choose to prioritize independence over safety and integrity over convenience, to editors who protect their reporters from institutional pressure, to media organizations that invest in the training and resources necessary for quality science journalism, to governments and civil society organizations that create and maintain the legal and institutional conditions for a free and independent press.

10.3 Toward a Theory of Emancipatory Science Journalism in Bangladesh

The concept of emancipatory science journalism, borrowed from and adapted from Paulo Freire's concept of emancipatory education and the tradition of critical communication studies, offers a normative vision for what science journalism in Bangladesh might aspire to become, one that is both realistic about the constraints it faces and committed to the possibilities of transformation.

Emancipatory science journalism, as I am using the term, is journalism that starts from the recognition that knowledge is power, and that the unequal distribution of scientific knowledge in society is both a cause and a consequence of broader social inequalities. It is journalism that is committed not just to informing the public but to empowering communities to understand and challenge the scientific and technological dimensions of the conditions that shape their lives. It is journalism that takes seriously the knowledge and experience of the most marginalized communities, that gives voice to those whose scientific and environmental knowledge is systematically undervalued, and that holds accountable the institutions whose decisions shape the scientific dimensions of social life.

This vision is demanding, and it will not be fully realized by any single journalist or any single media organization. It is a direction rather than a destination, a commitment rather than an

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achievement. But it provides a more adequate framework for thinking about the purpose and value of science journalism in Bangladesh than either the narrow technical model (science journalism as the communication of findings) or the political model (science journalism as a tool of propaganda or counter-propaganda). It situates science journalism within the broader project of democratic development: the ongoing, uneven, and never-completed effort to create a society in which every person has the information, the capacity, and the institutional conditions necessary to participate as a genuine agent in the decisions that shape her life.

The theory of emancipatory science journalism draws on multiple intellectual traditions. From Freire, it takes the insight that genuine education, and by extension genuine public communication, is not the deposit of information into passive recipients but a process of critical consciousness-raising in which people develop the capacity to name, analyze, and challenge the conditions of their own oppression. From the tradition of participatory action research, it takes the methodological commitment to research and communication that is conducted with, rather than on or for, affected communities. From the feminist science studies tradition, it takes the commitment to making visible and legitimate the knowledge produced by those who are positioned on the margins of dominant knowledge systems. And from the tradition of investigative journalism, it takes the commitment to accountability: the insistence that those who hold power must answer for how they exercise it.

In the Bangladeshi context, emancipatory science journalism would mean, among other things, covering the climate crisis from the perspective of the communities on the front lines of its impacts rather than from the perspective of international negotiating processes; covering agricultural science from the perspective of smallholder farmers and their specific knowledge and needs rather than from the perspective of research institutions and corporate interests; covering public health from the perspective of communities experiencing disease burdens rather than from the perspective of health authorities managing information about those burdens; and covering environmental science from the perspective of communities bearing the costs of industrial pollution rather than from the perspective of industries managing their regulatory exposure.

This is a demanding vision, and realizing it requires not just individual commitment but structural change: in the economics of journalism, in the legal framework for press freedom, in the educational preparation of science journalists, and in the professional culture and norms of the Bangladeshi journalism community. The remaining parts of this textbook are organized around the specific dimensions of this structural change: the educational institutions that prepare science journalists, the legal frameworks that protect or constrain them, the specific scientific domains in which they work, the international connections that shape their practice, and the communities they serve.

Chapter Eleven: The Theoretical Synthesis - Science Journalism as a Form of Democratic Practice

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11.1 Deliberative Democracy and the Science Journalist's Role

The normative framework that most adequately captures the democratic role of science journalism is, in this author's view, a version of deliberative democracy theory that has been enriched and complicated by feminist, postcolonial, and critical race theory. Deliberative democracy theory, associated with Habermas and a range of subsequent theorists including Seyla Benhabib, Iris Marion Young, and James Bohman, holds that the legitimacy of democratic decisions depends not just on their conformity with majority preference (aggregative democracy) but on the quality of the deliberative processes through which they are reached.

A high-quality deliberative process, in the ideal case, involves all those affected by a decision, treats all participants as epistemic equals, is governed by norms of mutual respect and good-faith reasoning, and results in decisions that can be justified to all participants even when they are not preferred by all. Science journalism contributes to this ideal by making relevant scientific information available for public deliberation, by helping to define and clarify the scientific questions at stake in policy decisions, by exposing the distortions introduced by commercial or political interests, and by amplifying the voices of those who would otherwise be excluded from the deliberation.

The deliberative model is not without its critics, and some of those criticisms are relevant to the practice of science journalism. The model has been criticized for being too optimistic about the possibility of rational consensus, for underestimating the role of power in shaping deliberative processes, and for privileging certain forms of communication (reasoned argument) over others (narrative, testimony, embodied expression) that may be more natural and more appropriate for some participants. These criticisms suggest that the science journalist committed to supporting democratic deliberation must be attentive to the range of forms in which relevant knowledge and experience can be communicated, and must resist the tendency to privilege certain kinds of evidence and certain kinds of voices over others.

Iris Marion Young's concept of "communicative democracy," which extends deliberative theory to include forms of greeting, rhetoric, and storytelling that are excluded from the classical deliberative ideal, is particularly useful for science journalism. The science journalist who can weave together the scientific evidence, the personal testimony of affected community members, the analytical perspectives of critical researchers, and the institutional responses of powerful actors into a story that is both intellectually rigorous and emotionally accessible is doing something more adequate to the complexity of democratic communication than the journalist who confines herself to a narrow, expert-focused form of information delivery.

11.2 Consciousness, Criticality, and the Science Journalist as Public Intellectual

The concept of the public intellectual, the person who brings intellectual resources to bear on public concerns in ways that are accessible and relevant to general audiences, is relevant to a sophisticated understanding of what the best science journalism aspires to. The science journalist as public intellectual is not just a reporter: she is someone who brings a developed analytical

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framework, a commitment to truth, and a capacity for synthesis and communication to the task of helping her society understand and navigate the scientific dimensions of its challenges.

This understanding of the science journalist's role is both demanding and empowering. It demands more than technical competence: it demands genuine intellectual engagement with the ideas, theories, and debates that shape the field one is covering. The science journalist who covers climate change needs to understand not just the physics of the greenhouse effect and the models that project future warming, but also the political economy of energy systems, the history of climate science and climate policy, the debates within the scientific community about the appropriate response to uncertainty, and the ethical frameworks that are relevant to decisions about intergenerational justice and the distribution of the burdens of climate action. This is an extraordinarily broad intellectual demand, and no individual can fully meet it. But the aspiration to engage seriously with the full complexity of the field one is covering distinguishes the public intellectual from the mere reporter.

The role of consciousness in science journalism goes beyond technical knowledge to something more fundamental: the cultivation of a particular kind of awareness, an attentiveness to the ways in which science and power interact, to the ways in which knowledge claims serve interests, to the ways in which the framing and communication of science shapes public understanding and political possibilities. This kind of critical consciousness is not simply a matter of being skeptical about all scientific claims: it is a more discriminating awareness that can distinguish between genuine scientific uncertainty and manufactured doubt, between legitimate institutional authority and the abuse of expert prestige for non-scientific purposes, and between the honest communication of complex information and the strategic deployment of information to serve institutional interests.

In the Bangladeshi context, the cultivation of this critical consciousness is complicated by the specific historical and political circumstances that have shaped the country's intellectual culture. The experience of colonial rule, followed by years of military dictatorship and authoritarian governance, has created a complex relationship between intellectual life and political power. Intellectuals and journalists who have challenged power have faced serious consequences, and the temptation toward either accommodation or, at the other extreme, reflexive opposition, is always present. The science journalist who aspires to genuine critical consciousness must navigate between these poles, maintaining a commitment to honest and rigorous analysis that is neither deferential to power nor reflexively adversarial.

11.3 Complexity, Nuance, and the Limits of Narrative

One of the deepest tensions in science journalism is between the demands of scientific understanding, which is always complex, nuanced, and uncertain, and the demands of journalistic communication, which tends toward simplification, narrative coherence, and definitive conclusions. This tension is not unique to science journalism: all journalism involves some degree of simplification. But it is particularly acute in science journalism because the gap between what the science actually shows and what a journalistic simplification can convey is often very large.

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The narrative demands of journalism, the need for protagonists and antagonists, for tension and resolution, for beginning, middle, and end, can systematically distort scientific understanding. The story of a disease outbreak becomes the story of the heroic epidemiologist who identified the source: the complex statistical and ecological analysis that led to the identification is invisible in the narrative. The story of a new agricultural technology becomes the story of the inventor and her struggle for recognition: the complex institutional, economic, and environmental context that determines whether the technology will benefit or harm smallholder farmers is left out. The story of a climate disaster becomes the story of individual survivors: the long-term trends and structural vulnerabilities that produced the disaster are reduced to background.

Good science journalism is aware of these narrative temptations and finds ways to resist them without abandoning the emotional and rhetorical resources of narrative. The best science journalism tells specific, concrete stories that are simultaneously connected to the larger scientific, institutional, and political contexts that give them their full meaning. It introduces the personal and the particular in ways that open out onto the systemic rather than closing down into the individual. It finds ways to communicate genuine uncertainty without abandoning the communicative power of narrative, to convey complexity without losing the attention of the reader, and to acknowledge the limits of what is known without undermining the credibility of what is confidently established.

This is difficult craft, and it is learned only through practice, feedback, and serious engagement with the best examples of the genre. The student of science journalism should read extensively in science journalism from both Bangladesh and internationally, should analyze the craft choices that distinguish the most effective science journalism from less effective work, and should practice writing about scientific topics for different audiences and in different formats, seeking feedback that helps identify where simplification has slid into distortion and where complexity has become inaccessible.

Coda to Part One: The Stakes and the Promise

Part One of this textbook has covered an enormous amount of ground. It has introduced the definitional debates about what science journalism is and what it should do. It has traced the history of science journalism in Bangladesh from the colonial period through the present moment of political transition and institutional flux. It has analyzed the philosophical foundations of science communication and the implications of different epistemological frameworks for journalistic practice. It has examined the legal framework for press freedom in Bangladesh with particular attention to the specific constraints and possibilities relevant to science journalists. It has explored the political economy of Bangladeshi media and the structural factors that shape what science journalism is possible and what is suppressed. And it has introduced a range of theories, from deliberative democracy to deliberate construction, from risk communication to emancipatory pedagogy, that provide frameworks for thinking about what good science journalism in Bangladesh should look like and how it can be achieved.

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The picture that has emerged is not a comfortable one. Bangladesh is a country where science journalism faces extraordinary challenges: legal frameworks that criminalize critical reporting, economic structures that undermine editorial independence, political cultures that suppress accountability journalism, and educational systems that produce too few journalists with adequate scientific training. The science journalist in Bangladesh operates in an environment where the most important stories are often the most dangerous to tell, where the institutions that should support independent journalism often work against it, and where the public that most needs good science journalism is also the public least equipped to demand and defend it.

But the picture is also not hopeless. Bangladesh has a tradition of journalism that, under conditions of extraordinary difficulty, has produced work of genuine importance and genuine courage. The reporters who covered the liberation war, who documented the arsenic crisis, who investigated the Rana Plaza disaster, who persisted in critical coverage of the garment industry's safety failures despite the enormous economic and political pressures against such reporting, are part of a tradition of committed journalism that provides both inspiration and precedent. The organizations, domestic and international, that advocate for press freedom in Bangladesh, that train journalists, that support investigative reporting, and that document and respond to attacks on journalists, represent a community of commitment that, while under pressure, remains active and engaged.

The students who will read this book, and who will enter the profession of science journalism in Bangladesh in the coming years, will do so in a moment of genuine political flux. The fall of the Sheikh Hasina government in August 2024, and the ongoing process of political and institutional reform under the interim government, represent both an opportunity and a challenge. The opportunity is real: the space for more honest, more critical, and more genuinely independent journalism has expanded since 2024, and the conversations about media reform are more substantive than they have been for many years. The challenge is equally real: the structural problems facing Bangladeshi journalism, including concentrated ownership, inadequate journalist protection, economic precarity, and the absence of a strong tradition of science journalism education, will not be solved by political change alone.

The science journalist who understands these stakes, who has thought seriously about the philosophy, the law, the economics, and the ethics of her profession, and who is committed to using that understanding in service of the public interest, is better equipped to navigate these challenges than one who has not engaged with them. This textbook is offered as a contribution to that equipping. What the student does with the understanding she develops here will determine what kind of science journalism Bangladesh has in the years and decades to come. The stakes, for the millions of people whose lives are shaped by the scientific and technological dimensions of Bangladeshi society, could not be higher.

Chapter Notes and Further Reading

On the Philosophy of Science:

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Karl Popper's "The Logic of Scientific Discovery" (1959) remains essential for understanding falsificationism. Thomas Kuhn's "The Structure of Scientific Revolutions" (1962) is a landmark text that every science journalist should read. Naomi Oreskes and Erik Conway's "Merchants of Doubt" (2010) is indispensable for understanding how scientific uncertainty is manufactured for political purposes. Sandra Harding's "The Science Question in Feminism" (1986) introduces the feminist critique of scientific objectivity.

On Science Communication:

Brian Wynne's essay "Public Understanding of Science" in the Handbook of Science and Technology Studies provides the classic statement of the contextual model. Dan Kahan's work on cultural cognition, available through the Yale Cultural Cognition Project website, is essential for understanding why information provision alone does not change attitudes on contested science topics. Matthew Nisbet's work on framing science is directly relevant to the practice of science journalism.

On Bangladesh Media and Press Freedom:

The annual reports of Reporters Without Borders (RSF) provide systematic documentation of press freedom conditions in Bangladesh. ARTICLE 19's submissions to the Bangladesh Media Reform Commission (2025) provide detailed legal analysis of the relevant legislative framework. The Clooney Foundation for Justice's report on the Digital Security Act (2025) provides the most systematic analysis available of how that law was used against journalists.

On the Political Economy of Communication:

Edward Herman and Noam Chomsky's "Manufacturing Consent" (1988) provides the classic political economy framework, though it must be adapted for the Bangladeshi context. Robert McChesney's subsequent work develops the framework in the context of digital media. For the South Asian context, Robin Jeffrey's "India's Newspaper Revolution" provides useful comparative material.

On Deliberative Democracy:

Jurgen Habermas's "The Theory of Communicative Action" (1984) provides the theoretical foundation. Iris Marion Young's "Inclusion and Democracy" (2000) offers important feminist critiques and extensions. Seyla Benhabib's edited volume "Democracy and Difference" (1996) brings together multiple perspectives on the limits and possibilities of deliberative theory.

Part One of Nine Parts ends here. Part Two will address the specific domains of science journalism in depth: health journalism, environmental journalism, agricultural journalism, and technology journalism in the Bangladeshi context, with extended case studies and analysis of specific controversies and landmark reporting.

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PART TWO: DOMAINS OF PRACTICE, CONFLICT, AND CONSCIOUSNESS

Health Journalism, Environmental Journalism, Agricultural Journalism, and Technology Journalism in the Bangladeshi Context

Preface to Part Two: On the Territory Ahead

Part One of this textbook built the philosophical and historical scaffolding. It asked what science journalism is, traced the turbulent history of the press in Bangladesh from colonial origins through post-independence convulsions and into the current volatile transitional moment, and established a set of theoretical frameworks drawn from deliberative democracy, feminist epistemology, postcolonial theory, and the philosophy of science. Part One was, by necessary design, abstract in many of its movements. It had to be. Before a science journalist can report on a disease outbreak, a flood, a pesticide controversy, or a blockchain experiment in rural microcredit, she needs to have thought seriously about what it means to know something, whose knowledge counts as legitimate, what legal and institutional structures constrain her practice, and what philosophical commitments underlie her professional choices. Part One tried to provide that foundation.

Part Two descends from the scaffolding into the building itself. It enters the specific domains where science journalism in Bangladesh actually happens: the domain of health and medicine, the domain of environment and climate, the domain of agriculture and food systems, and the domain of technology and digital transformation. Each of these domains is a world unto itself, with its own institutional actors, its own technical vocabulary, its own history of controversy and courage, its own specific intersection with Bangladeshi law and politics, and its own distinctive configuration of the tensions that Part One described at a general level. In each domain, the abstract becomes concrete. The philosophical question of what counts as legitimate knowledge becomes, in the health domain, the specific question of whether a journalist should report on an Ayurvedic remedy promoted by a politically connected figure when the scientific evidence for its efficacy is thin. The legal question of press freedom becomes, in the environmental domain, the specific question of whether reporting on the pollution practices of a garment factory owned by a member of parliament exposes the journalist to harassment, arrest, or worse. The epistemological question of how to handle uncertainty becomes, in the agricultural domain, the specific question of how to report on the contested science of genetically modified crops in a context where both fervent advocates and passionate opponents are capable of misrepresenting the evidence.

This part of the textbook is longer and more specific than Part One. It is organized into four extended chapters, each devoted to one of the four major domains. Each chapter combines theoretical analysis with specific Bangladeshi cases, historical narrative with current controversies, jurisprudential analysis with ethical reflection. Together, the four chapters aim to give the student of science journalism a rich and nuanced understanding of the terrain on which she will practice, the obstacles she will encounter, the intellectual resources available to her, and the professional and personal stakes involved.

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A word of warning is appropriate before beginning. The domains described in Part Two are not neatly separable in practice. Health is affected by environment: the dengue epidemic that devastated Bangladesh in 2023 and 2024 was in part a consequence of the climate-driven expansion of mosquito habitat. Environment is affected by agriculture: the arsenic contamination of Bangladesh's groundwater was made worse by the agricultural practices that the Green Revolution introduced. Agriculture is affected by technology: the digitalization of agricultural supply chains is transforming the economic relationships between smallholder farmers and the corporations that process and sell their produce. And technology permeates and transforms all the other domains. The student who reads these chapters as if they described four hermetically sealed territories is missing the most important lesson of the whole textbook, which is that the interconnectedness of knowledge domains is precisely what makes science journalism both so difficult and so important.

Chapter Twelve: Health Journalism in Bangladesh -- Between Accountability and Complicity

12.1 The Stakes: Why Health Journalism Matters More in Bangladesh than Almost Anywhere Else

Bangladesh's relationship with public health over the past fifty years is one of the most dramatic stories in the history of development. In 1971, the country that emerged from the Liberation War was, by almost every measure, one of the most health-impoverished nations on earth. Life expectancy was below fifty years. Infant mortality was catastrophic. Smallpox, cholera, and famine were not distant threats but immediate realities. The country's health infrastructure had been largely destroyed during the war, and the newly independent government had almost no resources with which to rebuild it.

What happened in the subsequent five decades defied what many international observers thought possible. By 2024, life expectancy in Bangladesh had risen to over seventy-four years, surpassing India's and approaching the levels of many middle-income countries. Infant and under-five mortality had fallen by more than ninety percent. Smallpox had been eliminated. Polio had been eliminated. Maternal mortality, though still too high by international standards, had fallen dramatically. The coverage of essential vaccines had reached near-universal levels. These achievements represent a genuine public health revolution, and they were achieved through a combination of community health worker programs, public-private partnership, civil society engagement, and innovative low-cost interventions that have been studied and cited by health systems researchers and development practitioners around the world.

But the story of Bangladeshi public health in the early twenty-first century is not only a story of triumph. The country faces a compounding set of health challenges that are simultaneously the product of its development successes and its continuing failures. The epidemiological transition is underway: as infectious diseases have declined in relative importance, non-communicable diseases including cardiovascular disease, diabetes, cancer, and chronic respiratory conditions

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have risen dramatically. Bangladesh's Universal Health Coverage service coverage index stood at just 54 out of 100 as of 2025, and 41.7 percent of the population experienced financial hardship due to out-of-pocket health expenditure, amounting to about 70 million people. WHO The health system, while dramatically expanded, remains deeply inequitable: quality care is concentrated in urban areas and accessible primarily to those with money and connections, while rural and poor populations depend on a system that is chronically underfunded, understaffed, and often poorly regulated.

At the same time, the climate crisis is reshaping the disease landscape in real time. According to the Lancet Countdown on Health and Climate Change 2025 report, launched in Dhaka in October 2025, Bangladesh lost 24 billion dollars in 2024, equivalent to five percent of its GDP, due to heat-related productivity losses. Citizens experienced an average of 28.8 heatwave days in that year, 13.2 of which would not have occurred without climate change. Dengue transmission potential has surged 90 percent compared to the baseline period of 1951 to 1960. Dhaka Tribune The intersection of climate change and public health is not a future scenario: it is a present emergency, and the journalists who cover Bangladesh's health system are simultaneously covering a climate emergency.

This is the territory in which health journalism in Bangladesh operates. The stakes could not be higher. Millions of people make health decisions based on information they receive from journalists. Policymakers allocate resources, design programs, and set priorities partly in response to what the media is reporting. Pharmaceutical companies, medical device manufacturers, private hospital chains, and unregulated medical practitioners all have interests in what the health media says and does not say. The health journalist in Bangladesh is not a neutral observer of this landscape. She is, whether she recognizes it or not, a participant in it.

12.2 The Structure of Health Information in Bangladesh: Sources, Gatekeepers, and Distortions

To understand health journalism in Bangladesh, one must first understand the structure of health information in the country: who produces it, who controls access to it, who has interests in its disclosure or concealment, and what mechanisms exist for its verification.

The primary official source of health data in Bangladesh is the Directorate General of Health Services (DGHS) within the Ministry of Health and Family Welfare. The DGHS maintains the Health Management Information System (HMIS), which collects data from public health facilities across the country on a monthly basis. In principle, this data provides a comprehensive picture of disease burden, health service utilization, and the performance of the public health system. In practice, the HMIS has well-documented limitations. Data quality varies enormously across facilities and districts. Reporting is often incomplete, delayed, or shaped by the institutional incentives of local health administrators who may not want to report figures that reflect badly on their performance. The epidemiological data produced by the Institute of Epidemiology, Disease Control and Research (IEDCR) is generally of higher quality for specific disease surveillance purposes, but it too is subject to political pressures, particularly regarding the reporting of disease outbreaks that might harm the government's public image.

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Private hospitals and clinics, which provide a large and growing share of health services in Bangladesh, are even less transparent. They have no legal obligation to report data to any central system, and their financial and clinical performance is largely opaque to the public. The Bangladesh Private Clinic and Diagnostic Centre Owners Association represents the sector's organized commercial interests, and it has consistently opposed regulatory measures that would require greater transparency or impose stricter quality standards. The pharmaceutical industry, which has grown into a significant domestic manufacturing sector in Bangladesh, produces its own research and promotional materials, which are frequently misrepresented or uncritically reproduced in the health media.

Traditional medicine systems including Unani, Ayurveda, and homeopathy are widely practiced and consumed in Bangladesh, and their practitioners include both trained professionals and an enormous number of unlicensed operators who exploit the regulatory gaps in the system. The Directorate of Drug Administration has jurisdiction over pharmaceutical regulation but has limited capacity to monitor traditional medicine products, many of which are sold with extravagant health claims that have no scientific basis. The health journalist who covers traditional medicine in Bangladesh is operating in a space where the boundaries between legitimate traditional practice, commercial exploitation, and outright fraud are often impossible to discern without specialized knowledge and significant investigative effort.

International organizations including the World Health Organization, UNICEF, the World Bank, and a range of bilateral development agencies are major producers of health data and analysis in Bangladesh. Their reports are often more reliable than domestic official sources, but they carry their own institutional biases and priorities. The WHO's country office in Bangladesh works closely with the government and is therefore unlikely to publish findings that directly contradict official positions. UNICEF's focus on maternal and child health means that other dimensions of the health system receive less of its analytical attention. The World Bank's health sector analysis tends to emphasize institutional and financial efficiency in ways that may undervalue equity and rights-based approaches.

The academic research community, both domestic and international, produces a substantial volume of health research relevant to Bangladesh. The James P. Grant School of Public Health at BRAC University, the International Centre for Diarrhoeal Disease Research Bangladesh (icddr,b), the School of Public Health at North South University, and the health research programs at various public universities all generate important empirical work on Bangladeshi health issues. International research institutions including the London School of Hygiene and Tropical Medicine, Johns Hopkins Bloomberg School of Public Health, and Harvard's T.H. Chan School of Public Health regularly produce research on Bangladesh, often in collaboration with local institutions.

The health journalist must understand this landscape of health information producers, recognize the institutional interests and limitations of each, and develop the skills to critically evaluate the quality and reliability of the information she receives from each source. This is a demanding intellectual task, and it is one for which most Bangladeshi health journalists are poorly prepared. A pilot study of health journalism in Bangladesh found that most health journalists (78.3 percent)

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had no previous training in health journalism, and in only 26.1 percent of cases was such training offered by their media house. The study found that many health articles contained questionable medical information (49.9 percent), mostly regarding unregistered clinicians (67.5 percent), often referred to incorrectly as "doctor." Frontiersrj

12.3 The Disease Outbreak Crisis and the Problem of Official Information

Perhaps no area of health journalism in Bangladesh better illustrates the structural tensions of the field than the reporting of disease outbreaks. Bangladesh is a country with high background rates of several communicable diseases including dengue, chikungunya, nipah virus infection, and various diarrheal diseases. It is also a country where the official response to disease outbreaks is frequently shaped by political considerations that distort the information available to the public.

The history of Bangladesh's official information management around disease outbreaks is not reassuring. During the 1974 famine, which the Sheikh Mujibur Rahman government initially denied was happening, the suppression of information contributed to a death toll that might have been reduced if the public and the international community had received accurate information earlier. During subsequent decades, various governments have shown a pattern of minimizing or delaying the disclosure of outbreak information when they perceived such disclosure to be politically costly.

The COVID-19 pandemic provided the most recent and most fully documented example of this pattern. The early months of Bangladesh's COVID response were characterized by serious delays in testing, significant underreporting of cases and deaths, and an information management approach that prioritized reassurance over accuracy. Journalists who attempted to report the true scale of the pandemic faced both official obstruction and the notorious Digital Security Act, which was used to prosecute at least a dozen journalists and social media users who published what the government characterized as "false" or "inflammatory" information about the pandemic response. In reality, many of the prosecuted reports and posts contained information that was subsequently confirmed by independent research.

The dengue crisis of 2023 and 2024 presented similar dynamics in a different register. Dengue has become an endemic and increasingly severe public health emergency in Bangladesh, with the 2023 outbreak being the worst on record at that time. Research published in 2025 confirmed the growing severity of climate-sensitive diseases in Bangladesh, finding significant discrepancies between the diseases currently occurring in relation to climate change and the available knowledge through existing research. PLOS The IEDCR's official case counts during these outbreaks were widely believed by health researchers and journalists to be serious undercounts, reflecting the limitations of passive surveillance in a context where many dengue cases are treated at home or in private facilities that do not report to the official system.

The health journalist who wants to report honestly on a disease outbreak in Bangladesh must therefore operate in a space of fundamental epistemic tension. She has access to official figures that are likely to undercount the true burden. She may have access to hospital records, cemetery data, and community surveys that suggest the true scale is much larger. She knows that reporting

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the higher unofficial estimates will likely bring her into conflict with health authorities, who will challenge her figures and potentially accuse her of alarmism or politically motivated reporting. She also knows that reporting only the official figures will make her complicit in a form of institutional deception that may cost lives by discouraging the public health response that the situation requires.

This is not a problem with a clean solution. The health journalist must make judgment calls, and those judgment calls involve weighing the reliability of different information sources, assessing the political risk of different reporting choices, and making ethical decisions about her responsibilities to the public, to official institutions, and to the truth. Part One of this textbook introduced some of the theoretical frameworks relevant to these decisions. The specific challenge of disease outbreak reporting makes those frameworks concrete and urgent.

12.4 Pharmaceutical Journalism: Corruption, Conflicts of Interest, and the Regulatory Vacuum

Bangladesh's pharmaceutical industry is, by the standards of lower-middle-income countries, remarkably sophisticated. The country's pharmaceutical manufacturing sector, which developed rapidly after the Drug Control Ordinance of 1982 gave the domestic industry preferential regulatory treatment, now produces approximately ninety-seven percent of the pharmaceuticals consumed in Bangladesh by volume and exports to more than eighty countries. The industry includes some genuinely capable manufacturers whose products meet international quality standards and some manufacturers whose quality control is, to put it charitably, inconsistent.

The pharmaceutical industry's relationship with the health media in Bangladesh is deeply problematic. The industry is a major advertiser in both print and broadcast media, and this commercial relationship creates systematic pressures toward favorable coverage and away from critical scrutiny. Medical correspondents who report negatively on pharmaceutical companies risk losing advertising revenue for their publications. Health pages and supplements in newspapers are often funded directly by pharmaceutical companies, raising obvious questions about editorial independence. Medical journalists are routinely invited to company-sponsored events, conferences, and press launches where the implicit expectation is coverage that promotes the company's products and perspective.

The regulatory framework for pharmaceutical advertising in Bangladesh is inadequate and poorly enforced. The Drug Control Ordinance of 1982 and the subsequent National Drug Policy contain provisions restricting the direct advertising of prescription drugs to the general public, but these provisions are routinely circumvented through indirect promotion via medical education events, sponsored media supplements, and the influence of company representatives on prescribing physicians. The Directorate of Drug Administration lacks the resources and, arguably, the political will to enforce existing regulations effectively.

The relationship between pharmaceutical companies and prescribing physicians is particularly problematic from a public health standpoint, and it creates a specific challenge for health journalists. The practice of pharmaceutical companies providing gifts, hospitality, travel, and

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educational sponsorship to physicians in exchange for prescribing preferences is illegal under Bangladesh's drug policy but extremely widespread. Physicians who prescribe particular brands of drugs may receive financial benefits from the manufacturers, a form of institutional corruption that directly harms patients by prioritizing the commercially promoted product over the clinically appropriate one. Health journalists who want to investigate this system face significant obstacles: the transactions are typically undisclosed and not easily documented, the physicians involved are often well-connected figures whose reputations a journalist cannot easily challenge, and the pharmaceutical companies have legal resources that most small media organizations cannot match.

The most egregious public health consequence of this pharmaceutical-prescriber nexus in Bangladesh is the massive overuse and misuse of antibiotics, which has produced alarming levels of antimicrobial resistance. Bangladesh has among the highest rates of antibiotic prescription in the world relative to documented clinical need, and a significant proportion of these prescriptions are for antibiotics not indicated for the presenting condition, or are of subtherapeutic dosage, or are dispensed without prescription by pharmacies that operate outside the regulatory framework. The resulting proliferation of resistant organisms threatens not just Bangladeshi patients but global public health, since resistant bacteria do not respect national borders. This is a story of enormous public health significance, and it has been extensively documented in the scientific literature. But it has received relatively little sustained attention in the Bangladeshi health media, and the coverage that has occurred has rarely penetrated to the structural causes of the problem: the commercial pressures on prescribers, the regulatory failures that enable unlicensed dispensing, and the political protection afforded to the pharmaceutical industry.

12.5 Hospitals, Private Medicine, and the Commodification of Health

The spectacular growth of private hospitals in Bangladesh over the past three decades represents one of the most consequential transformations of the country's health landscape, and it has been one of the least adequately covered stories in the Bangladeshi health media. The private hospital sector ranges from world-class institutions in Dhaka that offer tertiary care comparable to regional medical centers anywhere in Asia, to small clinics in district towns that operate under minimal regulatory oversight with equipment that may be outdated, staff whose qualifications may be uncertain, and practices whose safety cannot be assumed.

The commodification of health in Bangladesh, the process by which health care is increasingly organized around commercial rather than public health principles, has profound distributional consequences. It concentrates resources and quality care in the hands of those who can pay while leaving the poor dependent on an underfunded public system. It creates incentives for unnecessary medical procedures that generate revenue without improving health outcomes. It promotes a culture of medicalization in which pharmaceutical and technological interventions are preferred over cheaper and often more effective preventive and public health approaches. And it subjects health care decisions to commercial logic rather than clinical judgment.

The investigative reporting that this situation demands is extremely difficult to do in Bangladesh. Private hospitals are private businesses with legal rights to confidentiality about their financial

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and clinical operations. Patients who have been harmed by negligent or fraudulent medical practices often face enormous barriers to legal redress and may be unwilling to speak publicly about their experiences. Medical professionals who want to blow the whistle on malpractice or fraud face serious professional consequences in a tightly networked medical community where informal sanctions can be devastating. And the legal framework for journalistic investigation of private institutions is weaker than the framework for investigation of public bodies.

Nevertheless, some important health journalism in Bangladesh has engaged with these issues. The Rana Plaza disaster of 2013, though primarily a story about industrial safety rather than health care, prompted important reporting on occupational health that briefly opened the question of how private sector actors in Bangladesh treat health and safety as commodities. The reporting on fake cancer drugs that circulated in Bangladesh in the early 2010s, in which substandard or entirely fraudulent products were marketed as cancer medications, represented one of the more sustained pieces of investigative health journalism in recent Bangladeshi media history. These examples demonstrate that the genre is possible, even if it is too rare.

12.6 The Philosophy and Ethics of Health Journalism: Competing Frameworks

The practice of health journalism, like the practice of medicine itself, is pervaded by ethical conflicts that cannot be resolved by reference to any single moral framework. The health journalist must navigate between several different ethical orientations, each of which has compelling arguments in its favor and each of which can lead to problematic conclusions when applied without qualification.

The consequentialist tradition in ethics asks the health journalist to evaluate her reporting choices in terms of their likely consequences for public health. From this perspective, a story that saves lives by alerting the public to a dangerous medication or a disease outbreak is clearly justified, even if it involves some degree of privacy invasion or institutional confrontation. But the consequentialist framework can also justify suppression of information if the journalist judges that the public reaction to the information might cause more harm than the information itself: the classic case is the argument that reporting on a disease outbreak might cause panic that makes the outbreak worse. The consequentialist health journalist must therefore be an accurate predictor of complex social consequences, a task for which she may not be well equipped.

The deontological tradition asks the health journalist to identify rules and rights that must be respected regardless of consequences. The right to accurate information is a deontological commitment. So is the duty of honesty. So is the respect for patient privacy and medical confidentiality. These deontological commitments can conflict with each other: the public's right to accurate information about a disease outbreak may conflict with individual patients' right to privacy about their medical conditions. The health journalist who is guided primarily by deontological commitments must have a worked-out theory of how to resolve these conflicts, and the theory needs to be more sophisticated than a simple ranking of rights.

The virtue ethics tradition asks the health journalist to develop the character traits of a good health journalist: intellectual honesty, courage, compassion, practical wisdom, and commitment

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to the public interest. This tradition is less concerned with rules or consequences than with the cultivation of character over time, through practice, reflection, and engagement with exemplars of the profession. The virtue approach resonates with the way that experienced journalists actually talk about their practice: as something that requires judgment, wisdom, and character rather than the mechanical application of rules.

Each of these philosophical traditions has produced important insights for health journalism ethics. The professional codes of ethics that exist in various forms within journalism organizations draw eclectically on all three. But no professional code is a substitute for the kind of deep ethical reflection that the most difficult situations in health journalism require. The student of health journalism in Bangladesh needs to engage with these philosophical traditions seriously, not as an academic exercise but as preparation for the real moral dilemmas she will face in practice.

12.7 The Universal Health Coverage Debate: Health Journalism as Policy Advocacy

The debate about universal health coverage (UHC) in Bangladesh represents one of the most important ongoing policy conversations of the health sector, and it provides a particularly clear illustration of the relationship between health journalism and policy advocacy.

In November 2025, the World Health Organization convened a high-level technical consultation in Dhaka to present a draft of the Bangladesh Universal Health Coverage Roadmap 2026 to 2035, bringing together senior policymakers, high-level government officials, researchers, development partners, and health experts to shape Bangladesh's next steps toward universal coverage. WHO The UHC debate involves questions of extraordinary complexity and enormous stakes: how should a lower-middle-income country with limited fiscal capacity organize and finance a health system that provides equitable access to quality care for all of its citizens? What is the appropriate role of the public sector versus the private sector? How should the system be financed? What package of services should be guaranteed? How should the tension between efficiency and equity be managed?

These questions do not have technical answers that can be read off from the scientific or economic literature. They are fundamentally questions of political philosophy, about what kind of society Bangladesh wants to be and what claims its citizens can make on the state and on each other. The health journalist who covers the UHC debate is therefore necessarily also covering a fundamental debate about social justice and political values, not just about health policy.

The question of whether the health journalist should be a neutral chronicler of this debate or an advocate for a particular position within it is one of the most divisive in the field. The conventional journalistic norm of objectivity suggests that the journalist should present multiple perspectives without herself taking a position. But as scholars of public health journalism from Trisha Greenhalgh to Victor Navarrro have argued, a false balance between positions of unequal scientific or ethical merit is not genuine neutrality: it is a form of distortion that serves the interests of those who benefit from the status quo.

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In the specific context of Bangladesh's UHC debate, a strict neutrality that presents the arguments for and against market-based health care as equally well-founded is problematic because the evidence from comparative health systems research is quite clear about the consequences of different financing arrangements. Countries with strong public financing and universal coverage consistently achieve better health outcomes at lower cost than countries with primarily private financing. This is not a contested empirical claim: it is one of the most robust findings in health systems research. The health journalist who presents this evidence as merely one perspective among several equally valid alternatives is not being objective: she is misrepresenting the state of scientific knowledge.

12.8 Case Study: Reporting the Dengue Emergency

The dengue emergency in Bangladesh offers a case study that brings together many of the themes discussed in this chapter. Dengue fever, caused by any of four dengue virus serotypes and transmitted by the Aedes aegypti and Aedes albopictus mosquitoes, has been endemic in Bangladesh since at least the 1960s. But the severity and geographic range of dengue outbreaks has increased dramatically in recent decades, driven by urbanization, inadequate waste management and water storage practices, and increasingly by climate change.

The 2023 outbreak was, at the time, the worst on record in Bangladesh's history. By year's end, the IEDCR had reported more than three hundred thousand cases and more than sixteen hundred deaths, though independent health researchers consistently argued that true case counts and death tolls were several times higher due to underreporting. The 2024 outbreak, which coincided with the political upheaval surrounding the fall of the Sheikh Hasina government, further complicated the reporting environment. In the immediate aftermath of August 2024, government health institutions were in a state of significant organizational disruption, and the data systems that health journalists relied upon were temporarily degraded.

The dengue story, in the hands of the most capable health journalists, was not simply a story about case numbers. It was a story about the inadequacy of urban mosquito control programs, the political dynamics that determined which neighborhoods received vector control services and which did not, the economics of private dengue treatment in a context where hospitalization costs could bankrupt a poor family, the climate science that linked warming temperatures and changing rainfall patterns to expanded mosquito habitat, and the political economy of the waste management infrastructure that allowed Aedes breeding sites to proliferate.

The journalist who covered only the official case numbers was missing most of the story. But the journalist who tried to cover the full complexity faced formidable challenges: accessing the private hospitals that treated most of the severe cases was difficult, government officials were reluctant to discuss the limitations of the official surveillance system, the climate science angle required specialized knowledge that most health journalists did not have, and the political sensitivity of a story that touched on municipal governance failures and the equity consequences of urban service delivery made editors nervous about legal exposure.

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The dengue emergency also revealed a specific challenge in health journalism that deserves extended treatment: the problem of communicating risk to the public in a way that is accurate without being either alarmist or dismissive. The dengue virus kills a small proportion of those it infects, but that small proportion amounts to many hundreds or thousands of deaths in a large population, and the disease causes significant morbidity in many more. How should a journalist communicate this risk to readers who have little experience with probabilistic thinking and who may be prone to either ignoring statistical risk or overreacting to individual tragic cases?

The risk communication literature has generated a set of principles that are relevant here. Presenting both the probability and the magnitude of risk together, anchoring risk comparisons to familiar reference points, acknowledging uncertainty honestly without undermining confidence in valid conclusions, and emphasizing the actions that individuals and institutions can take to reduce risk are all evidence-based practices that good health journalists should know and apply. But these practices require a level of scientific and statistical literacy that the field has not yet systematically developed among Bangladeshi health journalists.

12.9 Mental Health Journalism: The Last Taboo

Mental health represents perhaps the most systematically neglected domain within Bangladeshi health journalism, and this neglect has serious public health consequences. The burden of mental illness in Bangladesh is substantial and growing. Depression, anxiety disorders, substance use disorders, and psychotic illnesses affect millions of Bangladeshis, but the cultural stigma attached to mental illness is so severe that most affected individuals do not seek care and most mental health problems remain undiagnosed and untreated.

A 2026 study published in Scientific Reports found that 57.3 percent of Dhaka residents reported depression and anxiety, and 48.3 percent reported stress, with rates significantly higher in Dhaka than in the less-polluted city of Rajshahi, suggesting a direct relationship between air pollution and mental health outcomes in Bangladesh. Nature These figures, if accurate, represent an extraordinarily severe burden of mental distress in the capital city. Yet mental health receives a tiny fraction of the health coverage that physical health conditions receive in the Bangladeshi media.

The reasons for this journalistic neglect are multiple and mutually reinforcing. The stigma that surrounds mental illness in Bangladesh is not confined to the general public: it pervades the journalistic profession as well. Mental illness is widely understood in terms of religious failure, moral weakness, or supernatural causation, and journalists who report on it as a medical condition challenge powerful cultural assumptions that are backed by religious authority. The lack of treatment facilities means there are fewer institutional sources of information about mental illness: in contrast to the busy hospitals and clinics that generate a constant flow of health stories, mental health institutions are few in number, poorly resourced, and often very reluctant to engage with the media. And the patients who have mental health conditions are, by definition, among the most vulnerable and least powerful members of society, with limited capacity to advocate for media attention to their situation.

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The Bangladeshi mental health journalist who takes her responsibilities seriously is therefore operating in a space of triple marginality: she is covering a health condition that is stigmatized, covering a population that is voiceless, and doing so within a professional culture that has not developed the frameworks and conventions for this kind of reporting. She must develop those frameworks largely on her own, drawing on international best practices for mental health reporting (which include sensitivity guidelines developed by organizations including the World Health Organization, the International Association for Suicide Prevention, and Reporting on Suicide) and adapting them to the specific cultural and institutional context of Bangladesh.

The mental health reporting landscape was further complicated by the political events of 2024 and 2025. The mass atrocities committed during the last period of the Sheikh Hasina government, including the killing of hundreds of protesters during the July-August 2024 uprising, created a substantial burden of trauma, grief, and post-traumatic stress in the population. The mental health consequences of political violence are well-documented in the international research literature, and they are particularly severe in societies that lack the resources and institutions to provide therapeutic support for affected individuals and communities. Reporting on this dimension of the post-uprising situation required health journalists to engage with the political as well as the clinical dimensions of mental health, a task for which most were not prepared.

Chapter Thirteen: Environmental Journalism in Bangladesh -- The Planet's Ground Zero

13.1 The Environmental Stakes: Bangladesh as Paradigm Case

If there is a country on earth that represents, in concentrated and terrible form, the convergence of environmental crisis, developmental aspiration, and journalistic urgency, it is Bangladesh. The country is a river delta, formed over millions of years by the accumulation of silt deposited by the Ganges, Brahmaputra, and Meghna rivers as they approach the Bay of Bengal. This geological reality makes Bangladesh extraordinarily fertile, which is why it has been able to support one of the highest population densities on earth. It also makes Bangladesh extraordinarily vulnerable to the hydrology of the rivers that flow through it and the climate system that governs rainfall, evaporation, and sea levels across much of South Asia.

The environmental challenges facing Bangladesh are not merely severe: they are, in many dimensions, existential. Climate change, driven primarily by the carbon emissions of wealthy industrialized countries, is raising sea levels, intensifying cyclones, increasing the frequency and severity of floods, expanding the area affected by soil and water salinity, and altering the rainfall patterns on which the country's agriculture depends. By 2030, nearly 90 percent of South Asia's population is expected to be at risk of extreme heat and nearly a quarter at risk of severe flooding, with Bangladesh among the most at risk in the region. Nearly 14 million Bangladeshis now live less than one meter above sea level, heightening vulnerability to flooding and salinity intrusion. World Bank

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But climate change is only one dimension of Bangladesh's environmental emergency. The country also faces severe environmental degradation from domestic sources: industrial pollution from the garment, tanning, and chemical industries; agricultural pollution from the massive use of chemical pesticides and fertilizers; urban air pollution from vehicles, brick kilns, and industrial installations that together make Dhaka one of the most air-polluted cities in the world; deforestation and loss of wetland ecosystems; and the ongoing crisis of arsenic in groundwater that affects tens of millions of people across the country.

Environmental journalism in this context is not a niche specialty for passionate naturalists. It is, or should be, a central component of the journalistic coverage of Bangladeshi society, because the environmental crisis shapes and will increasingly shape every aspect of life in the country: the food people eat, the water they drink, the air they breathe, the floods and droughts that determine whether they have livelihoods, the diseases they contract, and the places where they can live.

13.2 The History of Environmental Journalism in Bangladesh: A Tradition of Advocacy and Its Limits

The history of environmental journalism in Bangladesh is relatively short but not entirely undistinguished. Environmental coverage in the Bangladeshi press before the 1990s was minimal, confined largely to reporting on natural disasters and, occasionally, on government conservation initiatives. The first sustained attention to environmental issues in the Bangladeshi media came in the early to mid-1990s, partly in response to international environmental activism surrounding the Rio Earth Summit of 1992 and partly in response to the growing body of research documenting the environmental consequences of rapid industrial development in the country.

The arsenic crisis was, in many ways, the story that defined the early period of serious environmental journalism in Bangladesh. The discovery in the 1990s that millions of tubewells installed as part of international development programs to provide safe drinking water were in fact drawing from aquifers with naturally occurring levels of arsenic that exceeded safe drinking limits by enormous margins was one of the most important public health stories of the late twentieth century. The scale of the arsenic contamination, which affected an estimated 35 to 77 million people depending on the threshold used, was described by the World Health Organization as the largest mass poisoning in human history.

The reporting of this crisis involved extraordinary challenges. The science was contested and evolving: the health effects of chronic low-level arsenic exposure were not immediately apparent and required epidemiological studies that took years to conduct. The institutional interests were deeply entangled: the international organizations that had promoted the tubewell programs, including UNICEF and the World Bank, had obvious interests in minimizing the scale of the disaster they had inadvertently helped to create. The government of Bangladesh had interests in both acknowledging the problem (to attract international funding for remediation) and minimizing it (to avoid the implication that a flagship development success was actually a health

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catastrophe). And the affected communities, who were mostly rural and poor, had little voice in the media system that would determine whether their suffering received attention.

The journalists who covered the arsenic crisis in the 1990s and 2000s, including reporters from organizations like The Daily Star, Prothom Alo, and New Age, had to develop, largely through self-education, the scientific literacy needed to understand and communicate the epidemiology, toxicology, and hydrogeology of arsenic contamination. They had to navigate the institutional interests of multiple powerful actors. They had to find ways to give voice to affected communities while also engaging with the scientific and policy dimensions of the issue. And they had to maintain the accuracy and credibility of their coverage over a sustained period, as new scientific findings and policy responses required constant updating.

The arsenic crisis established a model, however imperfect, for sustained environmental journalism in Bangladesh. It demonstrated that complex scientific stories with long time horizons could be covered in ways that made them accessible to general audiences and that had genuine policy impact. It also demonstrated the limitations of journalism as an accountability mechanism in a context where the institutions responsible for the crisis were powerful, well-resourced, and protected by political relationships that made institutional accountability difficult to achieve.

13.3 Climate Journalism in Bangladesh: The Award-Winning and the Invisible

The twenty-first century has seen the emergence of climate journalism as a distinct and increasingly recognized specialty within Bangladeshi environmental reporting. Bangladesh's extraordinary vulnerability to climate change, combined with the international attention to climate issues driven by the global climate movement and successive IPCC reports, has created both the demand and some of the institutional support for climate journalism in the country.

In 2024, journalist Thaslima Begum produced groundbreaking investigations published in The Guardian into the effects of climate change on Bangladeshi health, including rising salinity in drinking water leading to pre-eclampsia and hypertension amongst pregnant women, similarly contaminated water contributing to alarming rates of kidney disease, and heavy rainfall and heat resulting in a fivefold increase in mosquito-borne dengue cases nationwide. These reports were referenced by Bangladeshi members of parliament and used by NGOs and researchers to raise much-needed funding. Covering Climate Now

This example of internationally recognized climate journalism from Bangladesh illustrates both the potential and the limitations of the field. Begum's work, published in a major international outlet with significant global reach, had genuine policy impact. It was also, notably, published in English and in an international rather than domestic Bangladeshi outlet, raising the question of whether the most sophisticated climate journalism from Bangladesh reaches Bangladeshi audiences or whether it primarily serves international advocacy and fundraising purposes.

In November 2025, the Center for Participatory Research and Development and The Climate Watch selected eight Bangladeshi journalists for the CPRD-TCW Reporting Fellowship 2025, with the fellowship aimed at strengthening climate journalism in Bangladesh by supporting in-

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depth, evidence-based reporting ahead of the United Nations Climate Change Conference COP30. The year's open call for applications drew nearly twice as many submissions as in 2024, reflecting growing interest among Bangladeshi journalists in climate and environmental reporting. The Business Standard

This growing interest in climate reporting among Bangladeshi journalists is genuine and encouraging. But it exists in tension with the structural conditions that make sustained, high-quality climate journalism difficult. The economic model of journalism in Bangladesh does not reward specialized, long-form, data-intensive reporting. Newsrooms are chronically understaffed, and reporters are expected to cover a wide range of topics rather than developing deep expertise in specific areas. The scientific literacy required for sophisticated climate journalism is not provided by most journalism education programs in Bangladesh. And the political sensitivity of climate reporting, which necessarily involves confronting the interests of industries and governments that prefer delayed or diluted action on climate change, creates institutional pressures against the most challenging climate stories.

13.4 The Structural Critique: Who Covers Environmental Stories and How

A 2025 content analysis study of environmental news reporting in regional Bangladeshi newspapers from six divisional headquarters during a fifteen-day disaster-free period found that coverage of regional newspapers was not much focused on local communities. Instead, newspapers prioritized national and international issues over pressing local challenges such as waterlogging, drought, saline intrusion, irrigation crises, and air pollution. Of the total stories, 44.62 percent addressed environmental problems, 9.7 percent focused on public protests, 15.52 percent on government drives and actions, and 25.22 percent on awareness programs. Despite their potential role in raising community awareness, regional newspapers provided largely event-based, elite-centered reporting with little investigative or research-based depth. Editorials and stories were often influenced by political and administrative interests, while contributions from experts and research institutions were almost absent. RSIS International

This portrait of event-based, elite-centered environmental reporting is consistent with what critics of Bangladeshi environmental journalism have observed for many years. The dominant model of environmental journalism in Bangladesh is reactive rather than proactive: it responds to events (floods, cyclones, chemical spills) rather than investigating structural conditions (the policy failures, economic incentives, and institutional weaknesses that make those events more likely and more severe). It privileges the perspectives of government officials and expert scientists over the knowledge and experience of affected communities. It is organized around individual incidents rather than long-term trends. And it tends to focus on national issues because the incentive structures of the media system, in which career advancement requires visibility in the national press, push journalists toward stories with national rather than local resonance.

The contrast between this dominant model and the most sophisticated international climate journalism is striking. The best international climate journalism, exemplified by the work of outlets like Inside Climate News, Columbia Journalism Review's climate coverage, and the Guardian's Environment desk, combines expert scientific understanding with community

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engagement, long-term investigative commitment with accessibility for general audiences, and systemic analysis with compelling individual narratives. It understands climate change not as a series of extreme weather events but as a fundamental transformation of physical and social conditions that requires sustained, sophisticated, multi-disciplinary coverage.

The gap between this international standard and the current practice of environmental journalism in Bangladesh is large but not unbridgeable. The key requirements for closing this gap are: investment in journalist training and specialization, development of institutional support for long-form investigative environmental journalism, creation of data infrastructure that gives journalists access to the environmental monitoring data they need, protection of journalists from the legal and physical threats that currently deter critical environmental reporting, and a shift in the professional culture of Bangladeshi journalism toward valuing specialized expertise and investigative depth over volume and versatility.

13.5 The Sundarbans, the Delta, and the Journalistic Imagination

The Sundarbans, the vast mangrove forest that stretches across the southwestern coast of Bangladesh and the adjacent Indian state of West Bengal, is one of the world's most ecologically significant landscapes and one of the most compelling environments for environmental journalism in Bangladesh. It is the largest mangrove forest on earth, a UNESCO World Heritage Site, a biodiversity hotspot that harbors the Royal Bengal Tiger, the Irrawaddy dolphin, and thousands of other species, and a natural barrier that protects millions of people in the coastal belt from the worst impacts of storm surges and cyclones.

The Sundarbans is also deeply threatened. Sea level rise is gradually inundating the low-lying islands within the forest. The salinity of the water that flows through the mangrove ecosystem is increasing as freshwater flows from upstream rivers are reduced by Indian dam construction. Cyclones of increasing severity are damaging the canopy. Illegal logging, poaching, and honey collection by desperately poor communities who have few other livelihood options are degrading the forest from within. And the proposed construction of the Rampal coal-fired power plant, a project that was the subject of one of the most significant environmental controversies in recent Bangladeshi history, threatened to add industrial pollution to all these other pressures.

The Rampal controversy is worth extended analysis as a case study in environmental journalism. The Rampal Power Plant, a Bangladesh-India joint venture to build a 1,320-megawatt coal-fired power station about fourteen kilometers from the boundary of the Sundarbans, was proposed in the early 2010s and became one of the most contentious environmental policy debates in Bangladesh's history. On one side were the Bangladesh government and the Indian power company NTPC, which argued that the plant was essential for Bangladesh's electricity needs and that its environmental impacts were manageable. On the other side were environmental organizations, scientists, and civil society groups that argued the plant would damage the Sundarbans ecosystem through thermal pollution, coal dust, noise, and increased river traffic, and that the official Environmental Impact Assessment was inadequate.

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The journalistic coverage of the Rampal controversy revealed several important features of environmental journalism in Bangladesh. First, it demonstrated that environmental stories can generate sustained public attention and political mobilization when they are linked to issues of strong cultural and ecological significance. The Sundarbans is not just an ecological resource for most Bangladeshis: it is a site of profound cultural and emotional attachment, associated with folklore, literature, and a national identity built around the delta landscape. Environmental journalists who connected the Rampal story to these cultural dimensions found that it resonated far beyond the usual audience for environmental coverage.

Second, the Rampal controversy revealed the limits of official environmental review processes as sources of reliable information for journalists. The Environmental Impact Assessment for the project was widely criticized by independent scientists and environmental organizations as methodologically inadequate and politically compromised. The journal Environmental Impact Assessment Review published detailed technical critiques of the assessment that were largely inaccessible to journalists without scientific training but were crucial for understanding the strength of the case against the project. Environmental journalists who could engage with these technical critiques were able to provide much more sophisticated coverage than those who had to rely on official documents.

Third, the controversy illustrated the personal risks involved in critical environmental journalism in Bangladesh. Journalists who covered the Rampal story critically, and particularly those who covered the civil society protests against the project, faced pressure from the government and from some of the powerful economic interests associated with the project. The Digital Security Act was a background threat that shaped what could and could not be said about government policy. The professional and sometimes physical risks involved in covering politically sensitive environmental stories were real and shaped the coverage that was produced.

13.6 Industrial Pollution and the Garment Industry: A Failure of Environmental Accountability

The Bangladesh garment industry is one of the most important sectors of the Bangladeshi economy, employing approximately four million workers and accounting for more than eighty percent of the country's export earnings. It is also one of the most significant sources of industrial pollution in the country, and the environmental consequences of garment industry pollution have been almost systematically underreported in the Bangladeshi media.

The primary environmental impacts of the garment industry fall into two categories: water pollution from textile dyeing and processing, and solid waste from fabric scraps, packaging, and rejected garments. The dyeing and processing of textiles requires enormous quantities of water and generates highly toxic effluents containing heavy metals, synthetic dyes, and other chemicals. Many of the rivers adjacent to the major garment factory clusters around Dhaka, including the Buriganga, Turag, Balu, and Shitalakhya, have been severely degraded by textile effluents, with consequences for the communities that depend on these rivers for fishing, irrigation, and drinking water.

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The journalistic coverage of garment industry water pollution has been characterized by a fundamental structural problem: the garment industry is simultaneously one of the most important economic sectors of Bangladesh and one of the most politically connected. The owners of major garment factories are often members of parliament, or closely connected to political leaders, or major donors to political parties. Reporting critically on their environmental practices is therefore not just reporting on a company: it is, implicitly or explicitly, reporting on politically powerful individuals, and the legal and professional risks of such reporting are substantial.

The specific legal mechanism most commonly used against environmental journalists who cover garment industry pollution is not a specific environmental law but the broad and flexible provisions of criminal defamation law, and more recently the Digital Security Act and its successor legislation. A journalist who reports that a specific factory is discharging polluted effluent in violation of environmental regulations is exposing that factory's management to legal liability and reputational damage, and the management has both the financial resources and the political connections to pursue legal retaliation.

13.7 Jurisprudence of Environmental Law and the Journalist

The legal framework for environmental protection in Bangladesh is more substantial than is commonly recognized, even if its enforcement has been chronically inadequate. The Bangladesh Environment Conservation Act of 1995 and its subsequent amendments provide the basic statutory framework for environmental regulation. The Environment Conservation Rules of 1997 set out specific standards for various categories of industrial effluent, air emissions, and solid waste. The Department of Environment (DoE) has legal authority to inspect industrial facilities, order remediation, and impose penalties for violations.

What the legal framework lacks, and what environmental journalists frequently discover when they try to use legal mechanisms to access environmental information, is effective enforcement. The DoE is chronically understaffed and underfunded relative to the scale of its mandate. The industrial facilities it regulates are often politically protected. The penalties for environmental violations are low enough that they are treated as operating costs rather than deterrents. And the mechanisms for public participation in environmental decision-making, which exist in principle under the Environmental Impact Assessment rules, are in practice often bypassed or rendered meaningless by the dominant mode of project approval, which prioritizes economic development over environmental protection.

The jurisprudential dimension of environmental journalism in Bangladesh involves not just understanding these statutory frameworks but understanding the constitutional foundations of environmental rights and the evolving body of environmental case law that has developed in the Bangladeshi courts. The Supreme Court of Bangladesh has, in a series of important decisions, recognized an implicit constitutional right to a healthy environment, derived from the right to life guaranteed by Article 31 and Article 32 of the Constitution. In decisions including cases involving the Buriganga river pollution and the Chittagong Hill Tracts, the courts have exercised a degree of environmental activism that, while inconsistent and sometimes difficult to enforce, has established important precedents for the legal enforceability of environmental protections.

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The environmental journalist who understands this jurisprudential landscape is better equipped to cover environmental cases, to understand the significance of court decisions, and to use legal mechanisms (including applications for environmental information under the Right to Information Act) to access data that institutions would prefer to keep confidential. The Right to Information Act of 2009, which grants citizens a legal right to information held by public authorities, is an important but underutilized tool for environmental journalism in Bangladesh. Its provisions have been successfully invoked in a small number of environmental cases to obtain pollution monitoring data, environmental impact assessments, and regulatory inspection records that government agencies were reluctant to disclose voluntarily.

13.8 The Political Economy of Climate Denial and Distortion in Bangladesh

The discussion of climate change in Bangladesh is complicated by a form of climate politics that is different in important respects from the climate denial that has been extensively analyzed in the context of the United States, Australia, and other wealthy fossil fuel-producing countries. Bangladesh is not a significant fossil fuel producer, and there is no domestic coal or oil industry with a direct financial interest in climate denial. The major Bangladeshi industries that benefit from delayed climate action, including the garment industry, the cement sector, and the power generation sector, do so not because climate mitigation threatens their raw material base but because it might require investments in clean technology and process changes that would increase costs.

But the subtler forms of climate distortion are very much present in Bangladeshi public discourse. Climate fatalism, the tendency to present Bangladesh's climate vulnerability as an inevitable natural fate rather than a consequence of specific policy choices by powerful actors, functions as a form of depoliticization that serves the interests of those who benefit from the status quo. When climate change is presented primarily as something that happens to Bangladesh rather than as something that is done to Bangladesh by the cumulative decisions of wealthy-country governments and corporations, the accountability dimension of the story disappears.

Climate parochialism, the tendency to present Bangladesh's climate crisis in isolation from its global political and economic context, has a similar effect. Bangladesh is responsible for less than 0.3 percent of global cumulative carbon emissions but faces among the most severe consequences of climate change. This profound injustice is a central fact of the climate story, and the climate journalist who fails to make it visible is missing one of the most important aspects of her subject. The international climate negotiation process, the mechanisms of climate finance, and the debates about loss and damage compensation for climate-vulnerable countries are all essential contexts for Bangladeshi climate journalism that are often absent from domestic coverage.

Chapter Fourteen: Agricultural Journalism in Bangladesh -- Science, Power, and the Politics of Food

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14.1 Agriculture and Bangladesh: The Historical and Contemporary Stakes

Agriculture is not just one sector of the Bangladeshi economy among others. It is the foundation on which the entire society rests. Bangladesh is one of the most densely populated agricultural countries on earth, with about 165 million people living on approximately 56,000 square miles of land, much of which is among the most productive in the world due to the exceptionally fertile alluvial soils deposited by the delta's river system. Agriculture directly employs approximately forty percent of the Bangladeshi workforce and provides the raw materials for important manufacturing and export industries including textiles (which depend on jute and cotton processing) and food processing.

More fundamentally, agriculture determines what people in Bangladesh eat, and therefore their nutritional status, their health, and their capacity for productive labor and cognitive development. The transformation of Bangladeshi agriculture over the past fifty years has been one of the great achievements and one of the great contradictions of the country's development experience. The Green Revolution, which introduced high-yielding varieties of rice and wheat along with the chemical inputs (fertilizers, pesticides, irrigation) that they require, dramatically increased food production and largely eliminated the famines that had killed millions in the early decades of Bangladeshi history. Bangladesh's achievement of rice self-sufficiency, from a country that was one of the world's largest rice importers in the 1970s to a country that is now a net rice exporter, is a genuine triumph of agricultural science and policy.

But the Green Revolution has also left a complex and in some respects deeply problematic legacy. The intensive use of chemical pesticides and fertilizers has contaminated soil and water, reduced biodiversity, degraded the long-term fertility of agricultural land, and created health risks for farming communities and consumers. The focus on a small number of high-yielding rice varieties has reduced agricultural biodiversity and increased vulnerability to pests and diseases. The groundwater-intensive irrigation systems that the Green Revolution promoted are drawing down aquifers in many parts of the country, threatening the long-term sustainability of irrigation-dependent agriculture. And the economic logic of the Green Revolution, which favored large-scale mechanized production over smallholder farming, has contributed to inequality and land concentration in rural Bangladesh.

Agricultural journalism that is adequate to this complex reality must be both technically sophisticated and politically acute. The journalist who covers Bangladesh's agricultural sector needs to understand soil science, plant genetics, hydrology, food systems, and agricultural economics. She also needs to understand the political economy of agricultural policy: who benefits from current arrangements, who suffers, whose interests are represented in policy decisions, and what alternative paths of agricultural development might look like.

14.2 The Green Revolution and Its Critics: A Case Study in Contested Scientific Authority

The debate about the Green Revolution is one of the best case studies available for understanding the nature of contested scientific authority in agricultural journalism. The dominant narrative of the Green Revolution, promoted by its architects including Norman Borlaug (who received the

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Nobel Peace Prize for his role in developing high-yielding wheat varieties) and its institutional sponsors including the International Rice Research Institute and the Ford and Rockefeller Foundations, presents it as an unambiguous humanitarian triumph that saved hundreds of millions of people from famine.

The critical narrative, developed by scholars including Vandana Shiva, Raj Patel, and Jack Kloppenburg, presents the Green Revolution as a form of corporate colonialism that undermined traditional agricultural knowledge, created dependency on imported inputs and commercially controlled seeds, exacerbated rural inequality, and produced long-term environmental damage that was not fully visible in its immediate productivity statistics. These critics do not deny that the Green Revolution increased food production: they argue that the costs of that increased production were systematically undervalued and that alternative paths of agricultural development were foreclosed by the political and institutional choices that the Green Revolution represented.

The agricultural journalist who wants to cover this debate honestly faces a characteristic problem of contested scientific authority: the empirical claims made by the Green Revolution's advocates and critics are not always directly comparable because they are measured by different metrics, over different time horizons, and with different assumptions about what counts as agricultural success. Productivity per hectare in the short term versus biodiversity, soil health, and nutritional quality in the long term; aggregate food production versus its distribution across different income groups and regions; economic efficiency at the macro level versus the livelihood security of smallholder farmers are all legitimate dimensions of agricultural performance that generate different verdicts on the Green Revolution depending on which dimension one emphasizes.

The agricultural journalist who presents this as simply a matter of perspective, in which the Green Revolution's advocates and critics are equally right and equally wrong, is missing the fact that some of these disagreements are genuinely empirical and can in principle be resolved by evidence. The evidence on biodiversity loss from Green Revolution monocultures is not a matter of interpretation: it is documented in the scientific literature. The evidence on pesticide health effects on farming communities is not a matter of perspective: it is a contested but empirical question. The agricultural journalist's responsibility is to engage with this evidence critically, to distinguish between the empirical and the value-laden dimensions of the debate, and to present her readers with the best available understanding of what the evidence shows.

14.3 Genetically Modified Organisms: Science, Law, and the Bt Brinjal Controversy

No issue in Bangladeshi agricultural journalism illustrates the complexity and the stakes of the field more vividly than the controversy over genetically modified organisms (GMOs), and within that controversy, the specific case of Bt brinjal (eggplant genetically modified to express a toxin from the bacterium Bacillus thuringiensis that kills specific insect pests).

Bangladesh became in 2013 the first country in South Asia and the first developing country to release a genetically modified food crop for commercial cultivation when the government of Sheikh Hasina authorized the cultivation of Bt brinjal. The decision was controversial from the

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moment it was announced. Proponents, including the Bangladesh Agricultural Research Institute (BARI) which developed the Bangladeshi Bt brinjal varieties, the Cornell Alliance for Science (which provided advocacy and communications support), and international agricultural development organizations, argued that Bt brinjal would reduce the massive pesticide applications that brinjal farmers in Bangladesh use (brinjal is one of the most pesticide-intensive crops in the country) and thereby reduce both the environmental damage and the health risks associated with those pesticide applications while maintaining or improving yields.

Critics, including environmental organizations, farmer groups, and a substantial portion of the international scientific community that studies GM crops, raised a range of objections. These included concerns about the adequacy of the biosafety review process, the potential for gene flow from Bt brinjal to wild relatives of the crop (of which Bangladesh has many, since brinjal is thought to have originated in the Indian subcontinent), the long-term stability of the Bt trait and the potential for pest resistance to develop, the intellectual property implications of technology that is owned by the Monsanto company (which holds patents on the Bt event used in the Bangladeshi varieties), and the broader agronomic question of whether reducing pesticide use through genetic modification is a better approach than integrated pest management, which achieves similar results without introducing genetic modifications.

The Bt brinjal story is one of the most complex cases in Bangladeshi agricultural journalism precisely because the scientific questions are genuinely difficult and the scientific community is genuinely divided, while simultaneously the political and economic stakes are enormous and the institutional interests involved are massive. The journalist who covers this story must be capable of engaging with the technical literature on GM crop biosafety, understanding the institutional interests of the research institutes, development organizations, and private companies that have invested in Bt brinjal, and evaluating the claims of critics who range from principled scientific skeptics to ideological opponents of any form of agricultural biotechnology.

One of the most instructive controversies within the Bt brinjal story concerns the question of how the scientific literature should be cited and used in public debate. Proponents of Bt brinjal consistently cited a body of peer-reviewed research showing that the Bt trait was safe for human consumption and that Bt crops had reduced pesticide use in other contexts. Critics cited a different body of research raising questions about long-term effects, ecological consequences, and the limitations of industry-funded safety testing. Each side accused the other of cherry-picking evidence, and each side was to some extent right. The agricultural journalist who simply reported that "scientists disagree" was providing an accurate but unhelpful description of the situation. The journalist who wanted to help her readers understand the actual state of the science needed to engage with the specific contested claims, evaluate the quality and independence of the research on each side, and provide a nuanced assessment that acknowledged genuine uncertainty without equating positions of unequal evidential support.

14.4 Food Security Journalism: Beyond Headlines and Crisis Narratives

Bangladesh's food security situation is a subject of enormous importance and considerable journalistic challenge. The country has, as noted above, achieved rice self-sufficiency and largely

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eliminated acute food insecurity of the kind that produced the devastating famine of 1974. But food security is not simply a matter of whether enough food exists in aggregate: it also involves whether people have reliable access to nutritious food that meets their specific dietary needs, and on this broader definition Bangladesh's food security picture is much more mixed.

Malnutrition remains a serious problem in Bangladesh, but its contemporary form is characterized by what nutrition scientists call the "double burden of malnutrition": the co-existence of undernutrition (stunting, wasting, and micronutrient deficiencies) and overnutrition (obesity, diabetes, and diet-related non-communicable diseases) within the same population, and indeed within the same households and communities. This is a relatively recent and poorly understood phenomenon in Bangladesh, and it is inadequately covered in the Bangladeshi media.

The double burden of malnutrition is, in part, a product of dietary transition: as incomes rise and urbanization accelerates, traditional diets rich in diverse vegetables, legumes, and fish are being replaced by diets with more processed foods, refined carbohydrates, and animal products. The dietary transition is not simply a matter of individual consumer choice: it is driven by changes in the food system, including the expansion of processed food manufacturing and marketing, changes in the retail food environment, and the relative prices of different foods, all of which are shaped by corporate practices and government policies.

The food system itself, from farm to table, is a major subject for investigative agricultural journalism that has been relatively underexplored in Bangladesh. The supply chains that connect small farmers to urban consumers are dominated by a complex system of intermediaries, processors, retailers, and informal traders, and the economics of this system often disadvantage farmers while raising prices for consumers. Food adulteration, the practice of adding substandard or fraudulent ingredients to food products, is widespread in Bangladesh and a serious public health concern. Food labeling regulations are inadequate and poorly enforced, making it difficult for consumers to make informed dietary choices.

14.5 Pesticide Journalism: Toxicology, Regulation, and Corporate Influence

The use of chemical pesticides in Bangladeshi agriculture is one of the most serious and least adequately reported environmental and public health stories in the country. Bangladesh uses a disproportionately large volume of pesticides relative to its agricultural land area, and many of the pesticides in use are highly toxic compounds that are restricted or banned in other countries. The health consequences of this pesticide use are severe: studies have documented high rates of pesticide poisoning among farmworkers, particularly those who apply pesticides without adequate protective equipment, and there is growing evidence of chronic health effects including reproductive problems, neurological damage, and increased cancer risk in communities with high pesticide exposure.

The journalistic coverage of this situation requires engagement with several different domains of expertise and institutional interest. The toxicology of specific pesticides, the epidemiology of pesticide-related illness, the regulatory framework for pesticide registration and use, the economic relationships between pesticide companies and agricultural extension workers, and the

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alternative approaches to pest management that might reduce dependence on chemical inputs are all essential components of an adequate pesticide story. The journalist who covers only the most dramatic incidents, such as acute poisoning deaths, without engaging with the structural factors that produce those incidents is providing an incomplete and ultimately misleading account.

The regulatory framework for pesticides in Bangladesh, governed primarily by the Pesticides Ordinance of 1971 and subsequent regulations, is inadequate in several respects. The registration process for new pesticides is less rigorous than international best practice requires. The residue monitoring system is too limited to provide a reliable picture of pesticide contamination in food. And the enforcement of restrictions on the sale and use of highly hazardous pesticides is weak. Multinational pesticide companies that sell products in Bangladesh that are restricted or banned in their home countries exploit these regulatory weaknesses, and the incentives for the domestic regulatory system to constrain their behavior are limited by the tax revenues and employment associated with their operations.

14.6 The Political Economy of Agricultural Research

Agricultural research in Bangladesh is conducted primarily by a network of public research institutes including the Bangladesh Agricultural Research Institute, the Bangladesh Rice Research Institute, the Bangladesh Agricultural Research Council, and specialized institutions focused on fisheries, livestock, forestry, and jute. These institutions receive their funding primarily from the government budget, with supplementary funding from international development organizations and, increasingly, from the private sector including seed companies, chemical companies, and agribusiness corporations.

The political economy of agricultural research funding has significant implications for what gets researched and how. Public agricultural research in Bangladesh has historically prioritized rice productivity, reflecting the government's overriding concern with food production and its political dependence on the rural vote. This has meant that other aspects of the food system, including the nutritional quality of agricultural produce, the environmental sustainability of agricultural practices, and the livelihood implications of different technological trajectories for different categories of farmers, have received less research attention.

Private sector funding of agricultural research introduces more direct corporate influence on research agendas. Seed companies fund research on hybrid and proprietary varieties. Chemical companies fund research on their products. Agribusiness corporations fund research on the varieties and practices that suit their supply chains. This funding is not inherently corrupting: it can support legitimate research on genuinely useful technologies. But it creates systematic incentives toward the technologies and practices that serve commercial interests, and away from the low-input, biodiversity-based, and community-managed approaches to agricultural development that might better serve the interests of smallholder farmers and the long-term health of agricultural ecosystems.

The agricultural journalist who wants to report on research controversies in this sector needs to understand these funding relationships and their implications for research design, data

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interpretation, and the publication and communication of findings. The principle of financial conflict of interest disclosure that is now standard in biomedical research has not been consistently applied in agricultural research, and the agricultural journalist who reads a study showing that a particular pesticide is safe for a particular use without asking who funded the study is missing crucial context.

14.7 Climate Change, Agriculture, and the Reporting of Complex Interactions

The intersection of climate change and agriculture is one of the most complex reporting challenges in contemporary Bangladeshi journalism. The consequences of climate change for Bangladeshi agriculture are multiple, interacting, and in some respects contradictory. Rising temperatures increase crop evapotranspiration demands and reduce yield potential for major food crops. Changing rainfall patterns affect planting calendars and irrigation requirements. More frequent and severe floods destroy standing crops and infrastructure. Sea level rise and storm surges increase soil salinity in coastal areas, reducing the productivity of agricultural land. And the increasing variability of weather patterns makes agricultural planning more difficult.

At the same time, longer growing seasons, higher atmospheric CO2 concentrations (which can increase photosynthesis under some conditions), and the possibility of new crop varieties adapted to warmer temperatures create some potentially positive effects for specific crops and regions. The net effect of climate change on Bangladeshi agriculture is negative and potentially catastrophic in the long run, but the specific consequences vary enormously across crops, regions, farming systems, and time horizons.

Reporting this complexity without either trivializing the climate threat or creating a narrative of total catastrophe that paralyzes rather than motivates action is one of the central craft challenges of agricultural climate journalism. The best agricultural climate journalism combines rigorous engagement with the scientific evidence, attention to the specific lived experiences of farming communities, analysis of the institutional and policy responses that are available, and a narrative frame that conveys both the severity of the threat and the possibility of effective response.

Chapter Fifteen: Technology Journalism in Bangladesh -- Digital Dreams, Data Realities, and the Surveillance Question

15.1 The Technology Story in Bangladesh: Promise and Peril in the Digital Age

The story of information and communication technology in Bangladesh over the past three decades is, in its broad outlines, a story of dramatic and genuine transformation. Bangladesh went from a country with negligible telecommunications infrastructure in the 1990s to a country with over 180 million mobile phone subscriptions, extensive 4G coverage, and a rapidly expanding digital economy in the 2020s. The garment industry, Bangladesh's economic backbone, has become increasingly sophisticated in its use of digital supply chain management and production coordination. The banking sector has undergone a digital revolution, with mobile

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financial services like bKash transforming financial access for millions of people who previously had no relationship with formal banking. E-commerce is growing rapidly. Digital government services are being rolled out across a wide range of areas from land registration to social protection delivery. And a growing technology sector including software development, business process outsourcing, and a nascent startup ecosystem has emerged in Dhaka and other urban centers.

These are genuine and important developments, and they deserve serious journalistic attention. But the technology story in Bangladesh is not only a story of progress and transformation. It is also a story of digital inequality, surveillance, misinformation, platform dependency, and the specific political uses of digital technology by governments and corporate actors who do not always have the public interest as their primary concern.

The contrast between the optimistic technology narrative promoted by government, development organizations, and the technology industry itself, and the more complex and sometimes troubling reality that a critical technology journalism would reveal, is one of the defining tensions of the field in Bangladesh. The technology journalist who uncritically reports the official and corporate narrative of digital transformation is not just failing professionally: she is potentially serving as an instrument of legitimization for policies and practices that harm the people she is supposed to be serving.

15.2 Digital Bangladesh, Smart Bangladesh, and the Ideology of Technology

The vision of "Digital Bangladesh," articulated by the Sheikh Hasina government in 2008 and implemented over the subsequent sixteen years, represented one of the most ambitious technology policy programs in Bangladesh's history. The Digital Bangladesh program aimed to use information and communication technology as a vehicle for economic development, government efficiency, and social inclusion. It produced real achievements: expanded internet access, digitization of government services, development of a technology sector, and the creation of a policy and institutional framework for the information economy.

It also became, over time, an ideology as much as a policy: a set of claims about the transformative power of technology that was used to justify a wide range of investments, to claim credit for any positive development that could be associated with digital technology, and to deflect criticism of the government by pointing to technological achievements as evidence of its developmental competence. The Digital Bangladesh narrative was so thoroughly integrated into the political identity of the Awami League government that critical journalism about technology policy was, in some contexts, treated as political opposition.

The successor vision, "Smart Bangladesh," articulated in the later years of the Hasina government and carried over in modified form into the post-August 2024 period, extended the technology ideology into the domains of artificial intelligence, blockchain, and "fourth industrial revolution" technologies. The Smart Bangladesh vision promised that advanced digital technologies would solve Bangladesh's development challenges, from healthcare delivery to

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agricultural productivity to financial inclusion, if the right investments and policy frameworks were put in place.

The technology journalist who wants to assess these visions honestly must engage with several different layers of analysis. First, the empirical layer: what have the Digital and Smart Bangladesh programs actually achieved, measured against their stated objectives? Second, the political economy layer: who has benefited from these programs, what contracts and opportunities have they created, and who has captured the economic rents associated with them? Third, the distributional layer: have the benefits of digital development in Bangladesh been widely shared, or have they primarily served urban elites and large corporations while leaving rural populations and poor communities behind? And fourth, the rights layer: have the digital infrastructure and regulatory frameworks created by these programs enhanced or diminished the rights of Bangladeshi citizens, including their rights to privacy, free expression, and protection from surveillance?

15.3 Surveillance Journalism: The Digital Security Act as Technology Story

The Digital Security Act of 2018 and its successor, the Cyber Security Act of 2023, were not just legal stories: they were technology stories of the most fundamental kind. These laws created a legal framework for state surveillance of digital communications, established criminal liability for a wide range of online speech acts, and provided the government with powerful tools for monitoring, controlling, and punishing digital expression. Understanding these laws and their technological implications is essential for any journalist who covers the intersection of technology and rights in Bangladesh.

The Digital Security Act, which has been analyzed in depth in Part One of this textbook, contained provisions that were specifically designed to enable surveillance: requirements that internet service providers and social media platforms retain user data and disclose it to government authorities, provisions criminalizing "hacking" that were broad enough to potentially cover the security research and penetration testing that technology journalists might use to investigate government systems, and authorization for law enforcement to monitor digital communications in ways that were inadequately constrained by judicial oversight.

The Cyber Security Act of 2023, which replaced the Digital Security Act in response to criticism from civil society and the international community, was widely described as cosmetic reform rather than genuine change. While it removed some of the most egregious provisions of the DSA and reduced some penalties, it retained the essential structure of digital surveillance authority and continued to criminalize forms of online expression that are protected under international human rights standards.

For the technology journalist, these laws have several important implications beyond their direct relevance to press freedom. They reveal the government's approach to the relationship between technology, security, and citizen rights, which is shaped by an authoritarian model of information control rather than a liberal model of digital freedom. They demonstrate the ways in which legal frameworks can be designed to enable technology-facilitated surveillance while maintaining a

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facade of legality. And they create a specific chilling effect on technology journalism itself: the journalist who investigates government surveillance capabilities or practices is potentially conducting activities that could be characterized as hacking or illegal access under the broad provisions of digital security legislation.

15.4 Platform Governance and the Global Tech Companies' Responsibilities in Bangladesh

The global social media platforms, primarily Facebook (operated by Meta), YouTube (Google), and TikTok, play an enormous role in the Bangladeshi information ecosystem. Facebook in particular is the primary digital public sphere for most Bangladeshi internet users: it is where news is shared, political debates occur, disinformation spreads, social movements organize, and harassment campaigns are launched. The technology journalist who wants to understand the information environment in Bangladesh cannot ignore these platforms.

The governance of these platforms in Bangladesh involves a complex set of actors and interests. The platforms themselves have content moderation policies that are, in principle, applied globally but in practice applied unevenly across different languages and contexts. Bangladeshi users have consistently reported that content moderation in Bangla is significantly less effective than in English, reflecting the resource disparities in the platforms' trust and safety operations. False information, hate speech, and harassment in Bangla persist on the platforms long after they would have been removed in English, creating conditions in which digital harms are more severe for Bangla-speaking users.

The specific history of Facebook and political violence in Bangladesh is an important case study in platform governance failure. During the communal violence that occurred in Comilla and other areas in October 2021, false information about attacks on Hindu communities spread rapidly on Facebook, contributing to mob violence that resulted in deaths, injuries, and destruction of property. Investigations by civil society organizations subsequently found that the false information had been deliberately spread by networks of fake accounts, and that Facebook's systems had failed to identify and remove the content rapidly enough to prevent significant harm.

This episode, and similar ones in 2022 and 2023, raised fundamental questions about the responsibilities of global tech companies in contexts where their platforms are used to facilitate violence and where their moderation systems are inadequately equipped for the linguistic and cultural context. The technology journalist who covers platform governance in Bangladesh must engage with these questions: what obligations do platforms have to protect their users from harmful content, what mechanisms exist for accountability when they fail to meet those obligations, and what role should the Bangladeshi government and civil society play in shaping platform governance?

15.5 Artificial Intelligence, Automation, and the Bangladesh Economy

The rapid development of artificial intelligence and automation technologies is creating both opportunities and risks for the Bangladeshi economy that the technology journalism community has only begun to address. The garment industry, Bangladesh's most important economic sector,

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is particularly exposed to the potential disruption associated with automation. The rise of automated sewing machines, robotic cutting and pattern-making systems, and artificial intelligence-driven supply chain management could, over the next decade or two, dramatically reduce the labor requirements of garment manufacturing and thereby threaten the livelihoods of the four million workers, overwhelmingly women, who currently depend on the industry.

The technology journalism surrounding this disruption risk is, at its best, genuinely sophisticated. It engages with the specific technical capabilities of current and near-future automation systems, evaluates the economic modeling that attempts to project the pace and scale of job displacement, considers the possibilities for industrial upgrading that might offset displacement by creating new and better-paid jobs, and attends to the specific vulnerabilities of women workers who face the greatest risk from garment automation. At its worst, technology journalism on this subject oscillates between uncritical boosterism of new technologies and apocalyptic predictions of mass unemployment, without engaging substantively with the complex economic and social dynamics that will actually determine the impact of automation on Bangladeshi workers.

The artificial intelligence story in Bangladesh extends beyond the garment industry to encompass a wide range of sectors including banking (where AI-driven credit scoring is being piloted in ways that could either expand or restrict access to credit for poor borrowers), agriculture (where precision agriculture applications are being promoted by development organizations and technology companies), health (where AI-assisted diagnostics are being developed and deployed in contexts where their performance may not have been validated for Bangladeshi populations), and governance (where algorithmic decision-making is being introduced into social protection programs in ways that may disadvantage the most vulnerable beneficiaries).

Each of these applications raises both opportunities and risks that the technology journalist needs to evaluate critically. The risks include the perpetuation and amplification of existing biases, the reduction of human judgment in contexts where it is essential, the concentration of economic power in the hands of technology companies, and the creation of new forms of exclusion and disadvantage for people who are already marginalized. The journalist who covers AI as a story of pure technological progress, without engaging with these risks, is not serving her readers.

15.6 Data Journalism, Scientific Data, and the Bangladeshi Capacity Deficit

Data journalism, the practice of using quantitative data analysis and visualization to support journalistic investigation and storytelling, has grown rapidly as a global phenomenon since the mid-2000s and is increasingly influential in science journalism internationally. In Bangladesh, data journalism remains underdeveloped, though it is growing in a small number of newsrooms including the Data Desk at The Daily Star and similar initiatives at Prothom Alo and The Business Standard.

The practice of data journalism in the context of Bangladeshi science journalism faces several distinct challenges. The first is data availability. Much of the most important scientific data relevant to Bangladesh, including environmental monitoring data, disease surveillance data, agricultural production data, and demographic data, is collected by government institutions but

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not made publicly available in machine-readable formats suitable for journalistic analysis. The Right to Information Act provides a mechanism for requesting data from public bodies, but in practice this mechanism is slow, contested, and often unsuccessful for detailed quantitative data.

The second challenge is data quality. Even when data is available, its quality is often uncertain. The incentive structures of Bangladeshi public administration do not consistently reward accurate data collection: officials who report figures that reflect well on their superiors' performance are more likely to advance than officials who report accurate but unflattering figures. The health data, agricultural data, and environmental data that exist in government systems are therefore subject to systematic biases that the data journalist must understand and account for.

The third challenge is analytical capacity. Data journalism requires statistical literacy, programming skills (in languages like Python or R), and the ability to use data visualization tools, all of which are currently in short supply in the Bangladeshi journalism community. The formal journalism education programs in Bangladesh do not consistently incorporate data literacy training, and most working journalists have developed whatever data skills they have through self-education and informal mentoring.

The fourth challenge is the institutional environment. Data journalism projects take longer and cost more than conventional reporting, and the economic model of most Bangladeshi news organizations does not easily accommodate the extended timelines and specialized labor that complex data projects require. The organizational support for data journalism, including editors who understand data, publication formats that can accommodate complex visualizations, and the technical infrastructure needed to host interactive data stories, is available only in a small number of the most sophisticated Bangladeshi media organizations.

15.7 Misinformation, Infodemic, and the Technology Journalist's Accountability

The spread of misinformation through digital platforms is one of the defining challenges of contemporary journalism globally, and in Bangladesh it takes specific and particularly damaging forms. The combination of high social media penetration, a media literacy deficit, a politically polarized information environment, and the specific vulnerabilities of minority communities to targeted harassment and violence creates conditions in which false information can have devastating consequences.

The COVID-19 pandemic demonstrated with brutal clarity both the scale of the misinformation problem in Bangladesh and the inadequacy of existing responses. Misinformation about the nature of the virus, the safety of vaccines, the efficacy of traditional remedies, and the government's management of the pandemic spread widely on social media, with measurable consequences for public health behavior and vaccine uptake. The government's response, which included prosecutions under the Digital Security Act of people who shared information that the government characterized as false, was counterproductive: it associated the fight against misinformation with authoritarian information control and thereby undermined trust in official communications.

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The technology journalist's relationship to the misinformation problem is complicated. On one hand, technology journalists are uniquely positioned to understand the technical mechanisms through which misinformation spreads, to identify and expose misinformation campaigns, and to analyze the platform governance failures that allow harmful content to persist. On the other hand, the tools and authorities needed to investigate these issues effectively are limited, and the legal environment, particularly the provisions of digital security legislation, creates risks for journalists who conduct technical investigation of misinformation operations.

The field of computational journalism, which uses computer science methods including natural language processing, network analysis, and machine learning to analyze large-scale patterns in digital information environments, is potentially very valuable for Bangladeshi technology journalists who want to investigate misinformation systematically. But these methods require skills that are not widely available in Bangladeshi newsrooms, and the collaboration between technical researchers and journalists that would be needed to apply them effectively is not yet well developed.

Chapter Sixteen: Cross-Domain Issues and the Architecture of Systemic Science Journalism

16.1 The Interconnectedness of Scientific Domains and Its Journalistic Implications

As the preface to Part Two warned, the four domains of science journalism analyzed in the preceding chapters are not hermetically sealed from each other. They intersect, overlap, and condition each other in ways that are essential to understand for the most sophisticated science journalism. This concluding chapter of Part Two examines several of the most important cross-domain intersections and draws out their implications for journalistic practice, institutional design, and professional education.

The intersection of health and environment is perhaps the most immediately obvious. Environmental pollution produces health consequences: air pollution causes respiratory disease, cardiovascular disease, and neurodevelopmental impairment; water pollution causes diarrheal disease, arsenic poisoning, and endocrine disruption; soil contamination causes heavy metal poisoning and agricultural chemical exposure. Climate change affects the distribution and severity of infectious diseases, the nutritional content of food crops (through elevated CO2 concentrations and temperature stress), the frequency of disasters that produce trauma and injury, and the capacity of health systems to respond to emergencies.

The journalist who covers health without understanding environmental causes of illness is covering only part of the story. The journalist who covers environmental pollution without documenting its health consequences is also covering only part of the story. The most important stories at the health-environment intersection, including the arsenic crisis, the air quality emergency in Dhaka, the climate-health nexus documented by the Lancet Countdown, and the

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occupational health consequences of industrial pollution, require precisely this kind of cross-domain literacy.

The intersection of agriculture and environment is similarly profound. Agricultural practices are among the most important drivers of environmental change in Bangladesh: they determine what happens to soil, water, and biodiversity across the majority of the country's land area. Agricultural intensification has increased both productivity and environmental damage. Deforestation for agricultural expansion has consequences for biodiversity, watershed function, and carbon sequestration. The specific choices made about which crops to grow, what inputs to use, and how to manage soil and water have cascading consequences for the environmental systems within which agriculture is embedded.

The intersection of technology and all other domains is increasingly fundamental. Digital technologies are transforming the practice of health care, the management of environmental resources, and the organization of agricultural systems. They are also transforming the information environment within which science journalism operates, creating both new opportunities for data-driven reporting and new challenges of misinformation, platform governance, and surveillance.

16.2 Systems Journalism: Frameworks for Covering Complex Interactions

The concept of systems journalism, which asks journalists to cover not just individual events and institutions but the systemic structures that produce those events and shape those institutions, is particularly relevant to the cross-domain challenges of science journalism. Systems journalism has been developed primarily in the context of international development reporting, but its core principles apply directly to the task of covering the complex, interacting systems that determine health, environmental, agricultural, and technological outcomes in Bangladesh.

Systems journalism asks the journalist to look for the feedback loops, non-linearities, and threshold effects that characterize complex systems. In the health-environment intersection, for example, the feedback loop between air pollution and economic activity is a systems phenomenon: economic growth drives pollution, but pollution reduces cognitive function and health, which reduces productive capacity and growth potential. The threshold effect in the arsenic story, where wells drawing from aquifers with arsenic concentrations just above a specific threshold were safe by one international standard but dangerous by another, is a classic example of the kind of non-linearity that systems journalism must be equipped to cover.

Systems journalism also asks journalists to look for leverage points: the places in a complex system where interventions can have disproportionately large effects. In the agricultural pesticide story, the regulatory registration process for new pesticides is a leverage point: a strengthened, more rigorous registration process could prevent the market authorization of dangerous products that then become entrenched in farming practice and extremely difficult to phase out. In the health system story, the physician prescribing culture is a leverage point: changes in medical education and professional norms around prescribing could reduce inappropriate antibiotic use far more effectively than enforcement of regulations that are routinely violated.

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The journalist who understands systems thinking, who looks for leverage points and feedback loops and threshold effects rather than just linear chains of cause and effect, is better equipped to help her readers understand not just what is happening but why it is happening and what kinds of change might make a difference.

16.3 The Investigative Imperative: Why Accountability Journalism is Essential in All Domains

Throughout Part Two, the concept of investigative journalism, journalism that goes beyond event reporting to investigate the structural conditions, institutional failures, and deliberate decisions that shape the outcomes being reported, has appeared repeatedly as both the most demanding and the most important form of science journalism. This is not accidental: it reflects a view about what science journalism's most important social function actually is.

The transmission model of science journalism, as Part One analyzed, treats the journalist's primary function as communicating scientific knowledge to a lay audience. This function is genuinely important, but it is insufficient. A journalism that only communicates what official institutions and expert researchers say, without investigating whether what they say is accurate, complete, and free from the distortions of interest and power, is not fulfilling its most important social function. The most important thing that good science journalism does is not information transmission but accountability: holding institutions and actors responsible for the decisions they make and the consequences those decisions have for people's lives.

In the health domain, accountability journalism investigates hospital malpractice, pharmaceutical industry influence, government failure to regulate effectively, and the distribution of resources and services across different populations. In the environmental domain, it investigates corporate pollution, regulatory failure, government complicity in environmental damage, and the health consequences of pollution for the communities that suffer them. In the agricultural domain, it investigates the lobbying influence of pesticide companies on regulatory policy, the conflicts of interest in agricultural research funding, and the distributional consequences of technological choices for different categories of farmers. In the technology domain, it investigates platform governance failures, state surveillance practices, the political economy of technology policy, and the distributional consequences of digital transformation.

This accountability function requires the journalist to be willing to challenge power, to persist in the face of institutional obstruction, to navigate complex legal risks, and to maintain the credibility of her reporting against the counterattacks of powerful interests. These are demands that not every journalist can or will meet, and the institutional conditions that support accountability journalism, including editorial independence, legal protection, financial security, and organizational commitment to the public interest, are not consistently present in the Bangladeshi media landscape.

16.4 The Philosophical Dimension: Science Journalism as Epistemological Practice

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Part Two has engaged throughout with specific domains and specific stories. But underlying all of this specific engagement is a set of philosophical commitments that are worth making explicit in this concluding chapter.

Science journalism, at its most sophisticated, is an epistemological practice: a practice concerned with how we know what we know, whose knowledge counts, and what the conditions are for reliable and trustworthy knowledge production in science and in journalism alike. This epistemological dimension distinguishes the most sophisticated science journalism from mere reporting on science: it asks not just what scientists have found but how they found it, whether the methods are valid, whether the conclusions follow from the evidence, and whether the institutional context of the research has shaped its conclusions in ways that are not apparent from the research reports alone.

The epistemological dimension of science journalism is directly connected to the political dimension. Science has never been simply a neutral pursuit of truth: it has always been conducted by human beings within social institutions that are shaped by power, interest, ideology, and history. The sociology of scientific knowledge, developed by scholars including Robert Merton, Thomas Kuhn, Bruno Latour, and Steven Shapin, has documented in detail the ways in which the social organization of science shapes what gets researched, how research is conducted, what counts as a valid result, and how scientific knowledge is communicated and used. The science journalist who ignores this sociological reality is working with an impoverished model of science that does not capture the full complexity of the phenomenon she is covering.

At the same time, the sociological critique of science does not justify a relativism that treats all knowledge claims as equally valid or invalid. Some scientific claims are better supported by evidence than others. Some research methods are more reliable than others. Some institutional structures for producing and verifying scientific knowledge are more trustworthy than others. The sophisticated science journalist must be able to distinguish between the genuine scientific uncertainty that characterizes all knowledge production and the manufactured uncertainty that is strategically deployed by interests that benefit from public doubt. She must be able to evaluate the quality of evidence without reducing it to a simple count of peer-reviewed papers. And she must be able to communicate genuine complexity and uncertainty to her readers without either false confidence or paralyzing relativism.

This is an extraordinary intellectual demand. It requires fluency in the philosophy of science, in the sociology of scientific knowledge, in the specific scientific domains she covers, and in the journalism and communication theory that illuminates how scientific knowledge reaches and is received by different audiences. No individual journalist can fully meet this demand: it is the work of a lifetime, not of a journalism degree. But the aspiration toward this kind of epistemological sophistication is what distinguishes the best science journalism from the mediocre, and it is the aspiration toward which every student of science journalism should be oriented.

16.5 Jurisprudential Reflections on Science Journalism and the Public Interest

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The legal and jurisprudential dimensions of science journalism in Bangladesh, which have appeared repeatedly in the domain-specific chapters of Part Two, deserve some synthesis and reflection at this concluding stage. Throughout these chapters, law has appeared primarily as a constraint: the Digital Security Act preventing critical health journalism, defamation law chilling environmental reporting, inadequate regulatory frameworks enabling pharmaceutical corruption, intellectual property law limiting access to agricultural research. This is an accurate picture of the way law usually functions in relation to science journalism in Bangladesh, but it is not the complete picture.

Law is also, potentially, a resource for science journalism. The Right to Information Act provides a legal mechanism for accessing government data. The environmental jurisprudence of the Supreme Court has established constitutional protections for environmental rights that journalists can invoke and report on. The Consumer Rights Protection Act of 2009 provides a legal framework for challenging fraudulent medical and pharmaceutical claims. The Competition Act of 2012 provides tools for investigating anti-competitive practices in pharmaceutical and food markets. And the international human rights framework, including the rights to freedom of expression and access to information recognized in the International Covenant on Civil and Political Rights to which Bangladesh is a party, provides normative standards that can be invoked in advocacy, litigation, and journalistic analysis.

The relationship between science journalism and law is not one of simple antagonism or simple partnership. It is a complex and contested relationship that the sophisticated science journalist needs to understand in all its dimensions: the ways in which law enables and constrains journalistic practice, the legal mechanisms available for accessing information and holding institutions accountable, the constitutional and international human rights frameworks that protect press freedom and define its limits, and the specific legal risks that different kinds of reporting create in different contexts.

The jurisprudential philosophy most relevant to this understanding is a version of legal realism enriched by critical legal theory: an approach that understands law not as a neutral system of rules but as a field of contestation in which different interests and values struggle for legal recognition, and in which the meaning of legal norms is always determined in specific social and institutional contexts rather than through purely logical analysis of statutory text. The science journalist who understands her legal environment through this jurisprudential lens is better equipped to navigate its complexities than one who either uncritically defers to official legal interpretations or dismisses the law as simply an instrument of power.

16.6 The Comparative Dimension: What Bangladesh Can Learn and What It Can Teach

Throughout Part Two, comparisons with international examples have appeared both explicitly and implicitly. The United States' experience with pharmaceutical industry influence on medical journalism, India's experience with agricultural biotechnology governance, the United Kingdom's model of science communication, and the global development of climate journalism have all provided reference points for understanding the Bangladeshi experience. These comparisons are useful, but they must be handled with care.

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The simplest form of comparative learning, importing practices and models from wealthier countries and applying them directly in Bangladesh, is often inappropriate because the institutional, cultural, economic, and political contexts are so different. The investigative reporting practices of the New York Times or the Guardian are shaped by legal systems, economic models, professional cultures, and institutional relationships that do not exist in Bangladesh. Attempts to simply transplant these practices into the Bangladeshi context without modification often fail.

More fruitful is a form of comparative learning that uses international examples as points of reference for understanding what is distinctive and what is shared about the Bangladeshi situation, and that seeks to develop approaches that are adapted to the specific constraints and opportunities of that situation. The development of internationally aware but locally grounded science journalism is a more achievable and more valuable goal than the simple replication of international models.

At the same time, Bangladesh has genuine contributions to make to the global development of science journalism. The experience of covering science in a context of extreme climate vulnerability, high population density, rapid social change, and significant constraints on press freedom offers lessons that are directly relevant to an increasing number of countries as climate change intensifies, as authoritarian tendencies spread, and as the institutional challenges facing journalism deepen globally. The development of science journalism that is both scientifically rigorous and rooted in the specific experience of a Global South society under pressure is a contribution of global significance.

16.7 Consciousness, Adulthood, and the Mature Science Journalist

The concept of consciousness, of a fully awakened awareness of the systemic forces that shape the practice of science journalism, is perhaps the most important concept in this part of the textbook. The student who enters the profession of science journalism in Bangladesh with the framework this textbook has tried to provide is not guaranteed to practice that journalism well. But she is better equipped than the student who enters the profession without having thought seriously about its philosophical, historical, legal, political, and ethical dimensions.

The development of professional consciousness is a process that does not end with the completion of a degree or the publication of a first story. It is a lifelong project of reflection, engagement, and growth that requires the journalist to continuously interrogate her practice, to ask not just whether her stories are accurate and well-written but whether they are serving the right purposes, whether they are accessible to the communities most affected by the issues they cover, whether they are contributing to accountability and democratic deliberation or to their opposite, and whether the professional choices she is making are consistent with the values that brought her to journalism in the first place.

The concept of adulthood in this context carries a specific meaning: the mature science journalist is not one who has abandoned her ideals but one who understands that realizing those ideals requires engagement with the real institutional, political, and economic conditions of her practice

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rather than retreat into either cynicism or naive idealism. The mature journalist knows that the institutions she works within are imperfect and sometimes actively hostile to good journalism, and she navigates those institutions with both a clear sense of her own commitments and a realistic assessment of what is achievable in specific contexts.

This maturity involves acknowledging the conflicts within the profession itself. Science journalists in Bangladesh disagree among themselves about the appropriate relationship between journalism and advocacy, about the use of social media by journalists, about the ethics of source protection and off-the-record conversations, about the appropriate balance between scientific authority and community knowledge, and about the degree to which science journalism should challenge rather than inform official positions. These disagreements are not signs of professional dysfunction: they are signs of a profession alive enough to debate the right questions. The student of science journalism should enter those debates with intellectual seriousness and ethical commitment, contributing to the development of the profession by engaging critically with the positions of her peers and mentors rather than simply deferring to received wisdom.

16.8 The Internal Conflicts of the Bangladeshi Science Journalist

The internal conflicts that characterize the practice of science journalism in Bangladesh are not merely abstract philosophical questions. They are lived experiences that affect the daily professional choices of real journalists working under real constraints. It is worth cataloguing some of the most common and most significant of these internal conflicts, because they represent the terrain on which the professional character of the Bangladeshi science journalist is formed.

The conflict between safety and truth is the most fundamental. The journalist who knows that a story about pharmaceutical corruption, or environmental damage, or government health system failure, or platform governance complicity in communal violence is true and important also knows that filing that story may result in legal prosecution, professional harassment, loss of employment, or, in the most extreme cases, physical danger. The decision about whether to file the story, how to frame it, what sources to name and which to protect, and what institutional support to seek before publication is a decision made in the shadow of real and specific risks. There is no general answer to how this decision should be made: it depends on the specific story, the specific risks, the specific journalist, and the specific institutional support available. But the journalist who has thought carefully about the ethical frameworks available for this decision is better equipped to make it than one who has not.

The conflict between scientific accuracy and communicative accessibility is a different kind of internal tension but equally real. The science journalist who understands an issue at a high level of technical complexity often faces the challenge of explaining that complexity to an audience that lacks the background to engage with it directly. The choices involved in translating technical content for general audiences are not merely linguistic: they involve judgments about what simplifications are acceptable and which are distortions, about what context is essential and what is merely interesting, and about how much uncertainty to communicate without undermining the communicative purpose of the piece. These judgments are often genuinely difficult, and the

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journalist who makes them without adequate technical knowledge of the subject is likely to make them badly.

The conflict between institutional loyalty and independence is a perennial source of professional stress. The journalist works for a media organization that has its own commercial interests, political relationships, and editorial culture. These organizational realities constrain what stories get commissioned, what perspectives get prioritized, and how controversies are framed. The journalist who is genuinely committed to independence and truth will sometimes find herself in conflict with her organization's preferences, and managing this conflict without either capitulating entirely to institutional pressures or making herself unemployable is one of the most demanding aspects of professional practice.

The conflict between community solidarity and scientific rigor is particularly sharp in the Bangladeshi context. The communities most affected by health, environmental, and agricultural problems in Bangladesh are often communities with whom the journalist has real sympathies and real connections. When those communities hold beliefs about their situation that are inconsistent with the best scientific evidence, the journalist faces a dilemma: does she report those beliefs as the legitimate knowledge of an affected community, or does she challenge them with scientific evidence, at the risk of appearing to dismiss or delegitimize the community's perspective? The contextual model of science communication discussed in Part One suggests a middle path: engaging seriously with community knowledge and experience while also providing the best available scientific evidence, without treating either as automatically trumping the other.

16.9 The Future of Science Journalism in Bangladesh: Structural Requirements for a Transformed Practice

Part Two of this textbook has documented, in considerable detail, the current state and the structural limitations of science journalism in Bangladesh. It has shown that the most important stories in the health, environment, agriculture, and technology domains are often the most difficult to tell; that the institutions that should support independent science journalism often work against it; that the educational preparation of science journalists is inadequate to the demands of the field; and that the legal and political environment continues to impose significant constraints on what can be reported and how.

But the purpose of this documentation is not despair. It is diagnosis: an accurate identification of the problems that must be addressed if science journalism in Bangladesh is to develop into the kind of institution that serves the public interest effectively. The structural requirements for such a transformation can be identified with some precision, even if the path to achieving them is long and uncertain.

The first structural requirement is economic: the creation of sustainable financial models for quality science journalism. The current dependence of most Bangladeshi media on advertising revenue from industries that have interests in shaping science coverage, combined with the economic precarity of journalists who are paid inadequately and given no job security, creates systematic pressures against the most important and most demanding forms of science

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journalism. Alternative economic models, including nonprofit journalism, foundation funding, subscription revenue, and reader-supported investigative journalism, all have precedents internationally and offer potential models for Bangladesh. The development of these models requires both entrepreneurial innovation and changes in the cultural expectations around journalism as a profession.

The second structural requirement is legal: the reform of the legal framework to provide genuine protection for science journalists while eliminating the provisions of digital security, criminal defamation, and official secrets legislation that currently create unacceptable legal risks for critical reporting. The recommendations of the Bangladesh Media Reform Commission, which were developed in 2025 and represent the most comprehensive reform agenda the country has seen, provide a starting point for this reform. But converting recommendations into legislation and legislation into practice requires sustained political will and civil society pressure that is not yet clearly available.

The third structural requirement is educational: the development of science journalism education that provides journalists with the scientific literacy, the data skills, the legal knowledge, and the ethical framework they need to practice at the level that Bangladesh's situation demands. This requires changes in journalism education at universities, the development of continuing professional education for working journalists, and the creation of institutional models for science journalism practice and mentorship.

The fourth structural requirement is institutional: the development of editorial cultures and organizational structures within media organizations that support specialized, investigative, long-term science journalism. This means editorial cultures that value accuracy and depth over speed and volume, that support journalists through the legal and professional risks of accountability reporting, and that have the organizational infrastructure (data systems, legal support, fact-checking capacity) needed for sophisticated science journalism.

The fifth structural requirement, which underlies all the others, is cultural: the development within the journalism profession and the broader Bangladeshi public of a culture that values good science journalism, that understands its importance for democratic governance and public health, and that demands and defends the conditions necessary for its practice. This cultural change is the slowest and most uncertain, but it is also, ultimately, the most important.

Chapter Seventeen: Controversies, Landmark Cases, and the Historical Archive of Bangladeshi Science Journalism

17.1 The Arsenic Crisis Revisited: Lessons for Contemporary Practice

The arsenic contamination crisis, briefly introduced in Chapter Thirteen, deserves more extended treatment as a landmark case in Bangladeshi science journalism precisely because it illustrates

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both the heights of which the field is capable and the structural limitations that prevent those heights from being consistently achieved.

The discovery that tens of millions of Bangladeshis were being poisoned by arsenic in their drinking water from tubewells that had been installed by development programs specifically designed to provide safe water was, in journalistic terms, a story that had almost everything: scientific drama, institutional failure, corporate and governmental responsibility, and the suffering of vast numbers of ordinary people. The challenge was that getting the story required scientific knowledge that very few journalists had, navigating the interests of institutions that were deeply invested in minimizing the problem, and communicating complex technical information about toxicology and hydrogeology to a general audience.

The journalists who rose to this challenge, working in publications including The Daily Star and in collaboration with international scientific institutions including the British Geological Survey, demonstrated what is possible when scientific literacy, institutional independence, and journalistic commitment combine. Their reporting contributed directly to the mobilization of international resources for the crisis response and to the development of alternative water supply options for affected communities. It was, by any standard, consequential journalism of the first order.

But the arsenic crisis also revealed structural limitations that have persisted. The initial delayed response to the scientific evidence about arsenic was partly a failure of science journalism: for several years after the scale of the problem became apparent to researchers, the Bangladeshi media was slow to give it the prominence it deserved. When coverage did develop, it was uneven in quality: some journalists had the scientific background to report accurately on the toxicology and epidemiology, others reproduced official minimizations or community misinformation without critical scrutiny. And the sustained, investigative follow-up that the story required, tracking the adequacy of the remediation response, monitoring whether alternative water supplies were reaching the most affected communities, documenting the health consequences of delayed action, was largely absent from the mainstream media.

17.2 The Rana Plaza Disaster and the Science of Industrial Safety

The collapse of the Rana Plaza garment factory complex in Savar on April 24, 2013, which killed more than eleven hundred workers and injured approximately two thousand five hundred more, was one of the deadliest industrial disasters in world history and one of the most important stories in Bangladeshi science journalism, even if it was not always recognized as such.

Rana Plaza was, at its core, a story about the science of structural engineering and industrial safety, about how buildings fail, about what kinds of structural inspection and certification systems prevent building failures, and about the institutional failures that allowed a building known to have cracks to be opened for work when its workers were afraid of it. The scientific dimensions of the story, the structural analysis of the building's failure modes, the toxicology of the injuries sustained, the epidemiology of occupational safety in the garment sector, and the fire

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safety and emergency response failures that made the death toll so high, were essential context for understanding what happened and why.

The coverage of Rana Plaza by the Bangladeshi media was, in its immediate disaster-response phase, extensive and often excellent in its human reporting. Bangladeshi journalists were on the scene within hours, documenting the rescue operations and the extraordinary bravery of both professional rescue workers and ordinary citizens who helped dig survivors out of the rubble. This human-centered reporting was important and appropriate in the immediate disaster phase.

What was less consistently present was the science and institutional analysis needed to explain the systemic causes of the disaster. Why had the building failed structurally? Who had inspected it, and why had the inspection process not identified the structural problems? What were the legal requirements for structural safety certification of commercial buildings, and how were those requirements enforced? What was known about the occupational safety risk in the garment sector before Rana Plaza, and how had that knowledge been used or ignored by the relevant regulatory institutions? These questions required the kind of scientific, legal, and institutional literacy that most Bangladeshi journalists had not developed, and their answers would have produced a more adequate account of the disaster than one focused primarily on individual responsibility and human suffering.

The post-Rana Plaza period saw important changes in the institutional landscape of garment industry safety in Bangladesh, primarily driven by the international buyers' response rather than domestic regulatory reform. The Accord on Fire and Building Safety in Bangladesh and the Alliance for Bangladesh Worker Safety, the two international frameworks that emerged in the aftermath of the disaster, imposed more rigorous structural inspection and safety audit requirements on the factories that supplied international brands. These frameworks have been the subject of both genuine celebration and important criticism, and the science journalism that has examined their performance and limitations has been some of the most sophisticated accountability journalism produced in Bangladesh.

17.3 COVID-19, Infodemic, and the Press Freedom Crisis: A Triple Failure

The COVID-19 pandemic created a triple crisis for science journalism in Bangladesh: a public health crisis that required sophisticated and accurate scientific communication, an infodemic of misinformation that competed with accurate information in the public sphere, and a press freedom crisis that used the public health emergency as cover for suppressing critical journalism.

The public health journalism challenge of COVID-19 was extraordinary by any standard. The science of the pandemic was genuinely uncertain and rapidly evolving: early guidance on transmission routes, protective measures, therapeutic options, and vaccine safety all changed significantly as the evidence base developed. The science journalist who followed the evidence honestly would have given her readers advice about masking that changed over the course of the pandemic, updated guidance about the relative effectiveness of different vaccines as clinical trial data became available, and modified assessments of the severity of different variants as their characteristics became clearer. This kind of responsible updating of reported scientific

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understanding is exactly what good science journalism should do, but it requires both scientific sophistication to track the evolving evidence and communicative skill to convey changing guidance without undermining the credibility of scientific expertise.

Most Bangladeshi health journalists were not equipped for this challenge. The lack of scientific training, the pressure to produce content rapidly, and the institutional pressures toward official messaging rather than independent analysis all contributed to COVID coverage that was, with important exceptions, inadequate to the demands of the moment. Official case counts and death tolls were reported without systematic evaluation of their reliability. Government claims about the success of the pandemic response were reported uncritically. The specific vulnerabilities of garment workers, domestic workers, and other economically precarious populations, who faced both heightened COVID risk and severe economic disruption, received relatively little sustained attention.

The misinformation dimension of the Bangladeshi COVID story was particularly damaging. Claims that the coronavirus could be cured by drinking hot water with ginger and lemon, that the vaccines contained microchips, that the disease was a foreign conspiracy, and that traditional remedies were more effective than vaccines all circulated widely on social media and caused measurable harm to the public health response. The science journalist's role in countering this misinformation required not just the ability to report accurate scientific information but the capacity to understand and engage with the psychological and social dynamics that made false information credible to many people, which required knowledge from social psychology, communication theory, and the sociology of knowledge that is not part of conventional journalism training.

The press freedom dimension of the COVID story was the most politically charged. The Digital Security Act was used to prosecute individuals who shared what the government characterized as false information about the pandemic, but who in many cases were sharing information that was at worst premature or approximate and at best genuinely accurate. The chilling effect of these prosecutions on journalistic coverage of the government's pandemic response was severe: journalists who might have investigated the true death toll, the failures of the oxygen supply system, the corruption in procurement of medical equipment, and the inequities in the vaccine distribution system were deterred by the legal risks involved.

17.4 The River Pollution Archive: Accountability Journalism Over Time

One of the most important and least celebrated bodies of science journalism in Bangladesh is the sustained coverage of river pollution that has appeared over several decades in publications including The Daily Star, Prothom Alo, New Age, and The Business Standard. This coverage, while uneven in quality and incomplete in many respects, represents a form of accountability journalism that has had genuine, if modest, policy impact.

The Buriganga river, which flows along the western edge of Dhaka, is one of the most heavily polluted rivers in the world. Industrial effluents from tanneries, textile factories, plastics manufacturers, and a wide range of other industries have turned it into what is effectively an

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open sewer. The fish that once supported the livelihoods of communities along its banks are largely gone. The communities that live adjacent to it are exposed to toxic chemicals on a daily basis. And the economic value of the river, as a transport route, a source of water for industries and agriculture, and an ecological resource, has been severely degraded.

The journalism that has covered Buriganga pollution over the years has documented this degradation in detail. It has named specific industries and their pollution practices. It has covered the legal proceedings against the most egregious polluters, including the court orders directing tanneries to relocate from Hazaribagh to the newly developed Savar tannery estate and the persistent failure to enforce those orders. It has traced the evolution of regulatory responses and their consistent inadequacy. And it has given voice, at least occasionally, to the communities that live with the consequences of this pollution in their bodies and their daily lives.

This is accountability journalism, and it matters. But the Buriganga story also illustrates the limitations of journalism as an accountability mechanism in a context where the institutional response to documented environmental violations is chronically inadequate. Despite decades of reporting on Buriganga pollution, despite court orders, despite international attention, the river remains severely degraded. The reasons are primarily institutional and political rather than journalistic: the economic interests behind the pollution are powerful and politically connected, the regulatory agencies lack the capacity and the will to enforce effectively, and the judicial system moves slowly against defendants who have the resources to delay indefinitely.

The science journalist who covers environmental accountability must therefore grapple with a difficult question: if good journalism is consistently insufficient to produce the institutional accountability it documents, what is its value? One answer is that journalism creates the conditions for accountability even when it does not guarantee it: it maintains public awareness of ongoing failures, provides the evidence base for civil society advocacy and legal action, and documents institutional failures for the historical record. Another answer is that the question itself reflects an unrealistic expectation of what journalism alone can accomplish, and that the appropriate response is not to abandon accountability journalism but to articulate more clearly its necessary relationship with other accountability mechanisms including civil society advocacy, judicial action, and political mobilization.

Coda to Part Two: The Science Journalist's Vocation

Part Two of this textbook has moved through four major domains of science journalism in Bangladesh, examining each with attention to its specific institutional, historical, legal, philosophical, and ethical dimensions. It has presented detailed case studies, drawn on the most current available research and reporting, engaged with the theoretical frameworks developed in Part One, and tried throughout to maintain the complexity and the contestedness that are the defining characteristics of science journalism honestly practiced.

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What emerges from this extended engagement is a portrait of a profession that is both more important and more difficult than it is generally recognized to be. Science journalism in Bangladesh is not a niche specialty for people who happen to be interested in both science and writing. It is, or should be, a central pillar of the democratic public sphere: an institution that makes scientific knowledge available and accountable to the people it affects, that holds powerful institutions responsible for the consequences of their decisions, and that amplifies the voices of those who are most affected by scientific and technological change but least able to participate in the decisions that drive it.

This vision of science journalism as democratic vocation does not romanticize the profession or ignore its contradictions. The science journalist is always operating within institutional, economic, political, and legal constraints that limit what she can do and how. She is always making judgment calls that involve genuine ethical complexity and genuine uncertainty. She is always at risk of being wrong, of being manipulated, of being captured by the interests she intends to hold accountable, and of failing the people she intends to serve.

But the awareness of these risks, and the development of the intellectual, ethical, and practical tools to manage them, is precisely what this textbook is trying to provide. The student who completes Part Two is not ready to be a perfect science journalist: no one is. But she is better equipped than before to understand what the field demands, what it can achieve, and what it requires her to be.

Part Three of this textbook will examine the international dimensions of science journalism in Bangladesh: the global scientific institutions, the international funding mechanisms, the transnational advocacy networks, and the global media systems that shape and are shaped by Bangladeshi science journalism. Part Four will examine the educational institutions and professional training systems that prepare science journalists. Parts Five through Nine will examine specific cross-cutting themes including gender and science journalism, digital transformation, international scientific collaboration, science communication in Bangla, and the future of the profession.

Chapter Notes and Further Reading for Part Two

On Health Journalism:

The study "Bangladesh health journalism: A pilot study exploring the nature and quality of newspaper health reporting" published in the International Journal of Frontiers in Life Science Research (2021) provides the most systematic empirical analysis available of the quality of health journalism in Bangladesh. The Bangladesh Health Watch's biennial reports, particularly the 2023-2024 report on public health education, provide essential context for understanding the health system that health journalists cover. Gary Schwitzer's work on evaluating the quality of health claims in journalism, available through HealthNewsReview.org, provides a practical framework for assessing journalism quality. Ben Goldacre's "Bad Science" (2008) and "Bad

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Pharma" (2012), while focused on the UK context, provide essential frameworks for understanding pharmaceutical industry manipulation of scientific information that apply directly to the Bangladeshi situation. Richard Smith's work on the corrupting influence of pharmaceutical advertising on medical journals extends these frameworks to the academic publishing context.

On Environmental Journalism:

Traci Warkentin's work on ecological communication provides a philosophical framework for environmental journalism. Sharon Friedman's research on environmental risk communication in journalism is directly applicable to the Bangladeshi context. The Earth Journalism Network (earthjournalism.net) provides resources, training materials, and case studies for environmental journalism across the Global South. The Reuters Institute for the Study of Journalism's annual Digital News Report increasingly includes analysis from Bangladesh. For the specific context of climate and health, the Lancet Countdown reports, which have been published annually since 2017, are essential resources.

On Agricultural Journalism:

Raj Patel's "Stuffed and Starved" (2007) provides an essential political economy framework for understanding global food systems. Jack Kloppenburg's "First the Seed" (1988) is the essential critical history of agricultural biotechnology's political economy. The International Panel of Experts on Sustainable Food Systems (IPES-Food) produces regular reports on global food system transformation that provide context for Bangladeshi agricultural journalism. For Bangladesh specifically, the publications of the Bangladesh Agricultural Research Council, while officially produced and therefore necessarily partial, provide essential information about the research landscape.

On Technology Journalism:

Zeynep Tufekci's "Twitter and Tear Gas" (2017) provides an essential framework for understanding social media and political mobilization that is directly relevant to Bangladesh. Yochai Benkler's "The Wealth of Networks" (2006) provides the theoretical framework for understanding digital media and public communication. For surveillance specifically, Shoshana Zuboff's "The Age of Surveillance Capitalism" (2019) provides the most comprehensive analysis of how digital platforms monetize personal data. The work of the Citizen Lab at the University of Toronto, which documents digital surveillance by authoritarian governments, is directly relevant to understanding the Bangladeshi context.

On Cross-Domain and Systemic Journalism:

Donella Meadows' "Thinking in Systems" (2008) provides the essential introduction to systems thinking that is directly applicable to science journalism. C.W. Anderson's work on computational journalism provides the framework for understanding data-driven approaches to science reporting. For the Bangladesh-specific context, the annual reports of Transparency

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International Bangladesh provide data on corruption that is directly relevant to accountability journalism in all domains.

Part Two of Nine Parts ends here. Part Three will examine the international dimensions of science journalism in Bangladesh, including global scientific institutions, international funding mechanisms, transnational advocacy networks, and the relationship between Bangladeshi science journalism and the global media system.

PART THREE: THE INTERNATIONAL DIMENSIONS -- GLOBAL SYSTEMS, TRANSNATIONAL POWER, AND THE BANGLADESHI SCIENCE JOURNALIST IN THE WORLD

Preface to Part Three: The Fiction of the National

There is a fiction that undergirds much of how journalism education is taught and much of how journalism is practised, especially in countries with strong nationalist traditions and politically contested media environments. The fiction is this: that journalism is fundamentally a national enterprise, conducted within the borders of a sovereign state, governed by that state's laws, serving that state's citizens, and accountable primarily to that state's institutions. In this fiction, the science journalist in Dhaka is a Bangladeshi journalist, serving Bangladeshi readers, working within Bangladeshi law, and responsible for Bangladeshi public knowledge.

This fiction is not entirely false. Much of what determines the daily practice of a science journalist in Bangladesh is indeed specific to Bangladesh: the specific legal frameworks that govern what can be published, the specific economic structures that determine which media organizations survive, the specific political culture that shapes editorial decisions, and the specific scientific problems of flooding, disease, pollution, and agricultural uncertainty that make certain stories urgent in ways they would not be urgent elsewhere. Journalism is necessarily embedded in specific places and specific societies, and the science journalist who ignores the particular realities of her location is not a better journalist for her cosmopolitan indifference.

But the fiction becomes genuinely dangerous when it obscures the ways in which the apparently domestic realities of journalism in Bangladesh are shaped, enabled, constrained, and sometimes fundamentally determined by forces and actors that operate across borders and beyond the reach of Bangladeshi law, Bangladeshi public accountability, and Bangladeshi professional norms. The international dimensions of journalism in Bangladesh are not a secondary supplement to the domestic story. They are, in many respects, constitutive of it.

The funding that enables some of the most important investigative journalism in Bangladesh comes from international foundations, international development organizations, and international advocacy networks. The legal frameworks that supposedly protect Bangladeshi journalists from state suppression are, as a matter of practical reality, enforced primarily through international pressure rather than domestic judicial accountability. The scientific knowledge that Bangladeshi

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science journalists report on is produced largely in international research institutions, published primarily in international journals, and evaluated primarily by international peer review processes whose norms and standards reflect the priorities and assumptions of wealthy-country scientific establishments. The digital platforms through which most Bangladeshi citizens receive information are owned by American corporations that are regulated by American law and governed by internal policies made in California without meaningful input from the 170 million people in Bangladesh who use their services.

Part Three of this textbook examines these international dimensions with the seriousness and complexity they deserve. It does not treat them merely as additional context for what is fundamentally a domestic story. It insists, rather, that the international and the domestic are so thoroughly interpenetrated that the distinction itself is in many respects analytically misleading, and that the most sophisticated science journalism in Bangladesh must operate with a clear-eyed understanding of both dimensions simultaneously.

The chapters in this part cover the following terrain. Chapter Eighteen examines the architecture of international press freedom advocacy and its specific relationship with Bangladesh, analyzing both the genuine importance of international pressure for maintaining the space for journalism and the ways in which that pressure is itself entangled in geopolitical interests that complicate its claimed universality. Chapter Nineteen examines the international funding landscape for journalism and science journalism specifically, with particular attention to the crisis created by the collapse of United States foreign assistance in 2025 and the implications for journalism organizations globally and in Bangladesh. Chapter Twenty examines the global scientific institutions whose work Bangladeshi science journalists must report on, analyzing the power relations embedded in those institutions and their implications for Bangladeshi participation in global science. Chapter Twenty-One examines the transnational digital information environment, including the platforms through which most Bangladeshi internet users receive information and the governance regimes that shape those platforms. Chapter Twenty-Two examines the international legal frameworks relevant to press freedom and science journalism, tracing the jurisprudential development of relevant international human rights law and evaluating its practical application in the Bangladeshi context. Chapter Twenty-Three examines South-South journalism cooperation as an alternative to dependence on wealthy-country institutions, analyzing both the potential and the limitations of this alternative. And the Coda reflects on what it means to practice science journalism in Bangladesh with full awareness of the international dimensions of that practice.

Throughout all of these chapters, the central analytical thread is this: international systems, institutions, and actors affect the practice of science journalism in Bangladesh in profound ways, and understanding those effects requires both empirical knowledge of the specific international systems involved and a critical analytical framework for evaluating the interests, power relations, and ideological assumptions that those systems embed.

Chapter Eighteen: The Architecture of International Press Freedom Advocacy

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18.1 The International Press Freedom Regime: Origins, Structure, and Ideological Foundations

The international press freedom regime, the network of organizations, legal instruments, diplomatic practices, and professional norms that purports to protect journalism from state suppression and to promote independent media globally, is one of the most important institutional realities shaping the practice of journalism in Bangladesh. Understanding this regime, its origins, its structure, its genuine achievements, and its significant limitations and contradictions, is essential for the Bangladeshi science journalist who wants to understand the international dimensions of her professional situation.

The foundations of the contemporary international press freedom regime were laid in the immediate post-World War Two period, when the architects of the new international order embedded commitments to freedom of expression in the foundational documents of the United Nations system. Article 19 of the Universal Declaration of Human Rights of 1948, which proclaimed that everyone has the right to freedom of opinion and expression including the right to seek, receive, and impart information and ideas through any media regardless of frontiers, established the normative core of the international press freedom framework. The subsequent elaboration of this right in the International Covenant on Civil and Political Rights (ICCPR) of 1966, which established binding legal obligations for state parties and created the Human Rights Committee as a monitoring mechanism, gave the normative commitment a degree of institutional elaboration.

The specific institutional architecture of the press freedom regime developed over subsequent decades through the growth of specialized non-governmental organizations, the development of protection mechanisms within the United Nations system, and the construction of regional human rights frameworks. The Committee to Protect Journalists (CPJ), founded in 1981, and Reporters Without Borders (RSF, founded in 1985 as Reporters Sans Frontieres) became the most prominent international organizations specifically dedicated to documenting press freedom violations and advocating for jailed journalists. UNESCO developed its own press freedom mandate through the MacBride Commission report of 1980 and subsequent resolutions. The European Court of Human Rights developed an increasingly sophisticated jurisprudence on press freedom under Article 10 of the European Convention on Human Rights.

The ideology underlying this regime is a particular version of liberal democratic theory: the view that individual liberty of expression is a fundamental human right, that a free press is essential for accountable democratic governance, and that states that suppress press freedom are violating both universal human rights and the conditions necessary for their own democratic legitimacy. This ideology is not without intellectual substance. The arguments for press freedom as a precondition of democratic accountability have deep roots in political philosophy, from John Milton's Areopagitica through John Stuart Mill's On Liberty to the contemporary deliberative democracy theory discussed in Part One of this textbook. And the empirical evidence for the positive relationship between press freedom and good governance, lower corruption, and better development outcomes is reasonably robust.

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But the press freedom ideology embedded in the international regime is not a neutral philosophical position. It emerged from specific historical contexts, carries specific political assumptions, and serves specific geopolitical interests that the critical analyst cannot ignore. The press freedom discourse of the Cold War period was thoroughly entangled with the ideological competition between Western liberal capitalism and Soviet communism: the West's emphasis on individual liberty of expression was simultaneously a genuine commitment and a geopolitical weapon. The press freedom rhetoric of the post-Cold War period has been similarly entangled with American foreign policy interests, with press freedom advocacy sometimes functioning as a form of soft power projection that promotes democratic norms that align with American interests while being selectively applied depending on the strategic importance of the country in question.

18.2 Bangladesh in the International Press Freedom Gaze: The RSF Index and Its Politics

The most widely cited instrument of international press freedom assessment is the World Press Freedom Index published annually by Reporters Without Borders. The Index ranks 180 countries on five indicators: political context, legal framework, economic context, sociocultural context, and safety. Bangladesh's position in this index, which has fluctuated significantly over the years in response to changes in its media environment, has become a significant political fact in the domestic debate about press freedom reform.

In the World Press Freedom Index for 2025, Bangladesh was ranked 149th out of 180 countries, an improvement of 16 places from its 2024 ranking of 165th. The Information and Broadcasting Adviser of the interim government, Md. Mahfuj Alam, cited this improvement as evidence of the government's commitment to media freedom, stating that all media outlets in the country were now free from government interference. Bangladesh Sangbad Sangstha These claims require careful evaluation, because the gap between the RSF ranking and the actual experience of journalists on the ground is often large, and the interim government's self-assessment of its press freedom record is, to put it mildly, disputed by independent observers.

Since July 2024, at least seven journalist murders were verified by the International Federation of Journalists (IFJ). A surge of other violent incidents included vandalism and arson attacks on the offices of The Daily Star and Prothom Alo in December 2025, which temporarily suspended publication at both outlets for the first time since their establishment. On January 26, 2026, ten members of the Crime Reporters Association of Bangladesh were allegedly assaulted in Narsingdi. On January 28, 2026, nearly a year after the Bangladesh Media Reform Commission submitted its recommendations, the interim government abruptly released a draft ordinance to establish a National Media Commission, allowing only three days for public feedback and disregarding many of the MRC's findings. The proposed Media Commission was condemned by international media freedom organisations for violating Article 19 of the International Covenant on Civil and Political Rights. International Federation of Journalists

The relationship between the RSF ranking and the actual press freedom situation in Bangladesh illustrates a fundamental problem with quantitative indices of press freedom: they measure certain easily quantifiable features of the legal and institutional landscape but cannot fully capture the lived experience of journalists who operate within that landscape. A country that

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reduces the number of formal prosecutions of journalists while increasing informal threats, economic pressure, and mob violence against newsrooms may show improvement on an index that counts prosecutions while actually becoming more hostile to independent journalism. The science journalist who cites the RSF ranking without this analytical context is providing her readers with a number that may be systematically misleading.

18.3 The IFJ, CPJ, RSF, and the Machinery of International Advocacy

The major international press freedom organizations, including the IFJ, CPJ, RSF, ARTICLE 19, and the Committee to Protect Journalists, operate as an informal international oversight system that documents press freedom violations, advocates for jailed journalists, applies diplomatic pressure on violating governments, and provides emergency support including legal assistance and safety training to journalists in danger. For Bangladeshi journalists, these organizations represent a significant, though by no means sufficient, source of international support and accountability.

The documentation work of these organizations is genuinely important. The Oxford Human Rights Hub's analysis of Bangladesh identified the concept of "weaponized legalism" to describe the systematic deployment of formally legal procedures to suppress fundamental rights, particularly press freedom, while maintaining the appearance of constitutional governance. Within eight months of the interim government assuming power, it systematically targeted 640 journalists through criminal prosecutions, accreditation revocations, and financial investigations, despite the Chief Adviser's September 2024 public commitment to full press freedom. Oxford Human Rights Hub

This concept of weaponized legalism is one of the most analytically powerful frameworks available for understanding the specific form that press suppression takes in contemporary Bangladesh. Unlike direct censorship, which is relatively easy to document and challenge, weaponized legalism operates through the formal apparatus of law in ways that are harder to condemn without appearing to defend lawlessness. The government can always respond to international criticism of journalist prosecutions by pointing to the formal legal procedures followed and insisting that the law was applied equally to all citizens. The international press freedom community must therefore engage not just with the application of the law but with the law itself, arguing that formally enacted legislation violates international human rights standards.

A 2025 report by the Clooney Foundation for Justice and the Centre for Governance Studies analyzed 222 cases involving 396 journalists prosecuted under the Digital Security Act, finding that authorities used the law as a tool of harassment and intimidation. Most proceedings did not reach trial, and the one journalist in the dataset who was convicted was subsequently acquitted, reflecting the baseless nature of the cases. The report found that while the DSA was replaced, the 2025 Cyber Security Ordinance retained vaguely worded provisions that could still be used to suppress speech, particularly Section 26, which criminalizes publishing content that "creates anxiety." Cfj

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The work of these organizations raises, for the critical analyst, a fundamental question about the politics of international press freedom advocacy. The organizations operate on the basis of universal principles of press freedom, but their attention, resources, and credibility are not distributed uniformly across all countries and all situations. The press freedom of journalists in strategically important or diplomatically prominent countries receives more international attention than the press freedom of journalists in smaller or less strategically important countries. The press freedom of journalists working for organizations that are legible to international audiences, typically English-language outlets covering stories of international interest, receives more attention than the press freedom of vernacular journalists covering local stories of local significance.

This selectivity is not entirely avoidable. Organizations with limited resources must make choices about where to direct their attention. But it means that the international press freedom regime is not a neutral, universal system of protection: it is a system that provides uneven protection based on criteria that do not map straightforwardly onto the severity of press freedom violations. The Bangladeshi science journalist who understands this unevenness is better equipped to think strategically about how to use international advocacy most effectively.

18.4 Weaponized Legalism as a Transnational Pattern

The Oxford Human Rights Hub analysis identified five characteristic mechanisms through which weaponized legalism operates: nominally legal authorization through formally enacted legislation; substantive illegality despite formal procedures, as charges violate international human rights standards; selective enforcement against journalists and opposition figures; financial investigation of journalists' accounts creating deterrent effects equivalent to criminal charges while exploiting regulatory grey zones; and the use of accreditation revocations to restrict journalists' access. The Bangladesh Financial Intelligence Unit was actively investigating the financial information of at least 85 journalists since the overthrow of the Hasina regime, with the accounts of ten journalists frozen. Oxford Human Rights Hub

What makes this analysis particularly important for the science journalist is its identification of weaponized legalism as a transnational methodology. It is not a uniquely Bangladeshi phenomenon. The same patterns appear, with local variation, in Thailand, Myanmar, Pakistan, Egypt, and an expanding list of countries where governments have discovered that formal legal procedures can accomplish the suppression of journalism more effectively, and with greater international impunity, than direct censorship.

The transnational character of weaponized legalism has important implications for how the international press freedom regime must respond. Individual case advocacy, focused on securing the release of specific jailed journalists, is necessary but insufficient. The regime must also engage with the systemic legal architectures that enable weaponized legalism: the digital security laws, the financial investigation authorities, the accreditation systems, and the criminal defamation provisions that governments use as instruments of control. This systemic engagement requires a different kind of legal and political analysis than case-by-case advocacy, and it requires the press freedom organizations to engage with legislative and constitutional reform

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processes in ways that may create tensions with the governments they are simultaneously trying to influence on specific cases.

For the Bangladeshi science journalist, this analysis is not merely academic. She is working in a country where the legal infrastructure for weaponized legalism has been refined over decades and where a new government has, despite its democratic credentials, shown an early willingness to use that infrastructure in ways that are continuous with, rather than departing from, the practices of its predecessors. Understanding the specific legal mechanisms available to the state, and understanding the specific international legal standards that challenge those mechanisms, is part of the professional preparation that the sophisticated science journalist needs.

18.5 UNESCO and the Development of Press Freedom as International Policy

UNESCO's role in international press freedom is distinctive in several respects. Unlike the advocacy organizations, UNESCO is an intergovernmental body that works through member state governments as well as around them. It has a formal mandate for press freedom derived from its constitution and from the MacBride Commission Report of 1980, and it has developed an operational programme including journalist safety training, media development support, and advocacy for legal reform that operates in Bangladesh and many other countries.

In observance of World Press Freedom Day 2025, UNESCO Dhaka, in partnership with the Embassy of Sweden and Transparency International Bangladesh, convened a national dialogue on the theme "Brave New Bangladesh: Reform Roadmap for Press Freedom," bringing together over one hundred participants including journalists, editors, policymakers, civil society leaders, students, and international partners to confront growing threats to press freedom and chart an inclusive reform agenda. The event responded to pressing concerns including increasing censorship, economic pressures on journalists, legal threats, gender disparity in newsrooms, and impunity for crimes against media professionals. UNESCO

UNESCO's approach to press freedom in Bangladesh represents a distinctive form of international engagement that is worth analyzing for what it reveals about the politics of international press freedom promotion. UNESCO operates through dialogue and persuasion rather than condemnation and sanction. It works with governments and journalists simultaneously, trying to create spaces for reform within political systems that may be hostile to independent journalism. This approach has the advantage of maintaining access and relationships that more confrontational advocacy organizations may sacrifice by their willingness to criticize governments directly. It has the disadvantage of sometimes appearing to legitimize governments whose press freedom records deserve condemnation rather than partnership.

The UNESCO approach is broadly consistent with the theory of change associated with what political scientists call "norm socialization": the idea that states gradually internalize international norms through processes of social influence, persuasion, and the construction of identities as "norm-compliant" actors. This theory suggests that international engagement, including the provision of training, technical assistance, and forums for dialogue, can gradually shift the behavior of governments toward greater compliance with press freedom norms even in

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the absence of strong enforcement mechanisms. The theory has some empirical support from comparative studies of human rights norm diffusion, and it is not without practical merit.

But the Bangladesh case also illustrates the limits of the norm socialization approach in contexts where the political incentives for suppressing journalism are strong and persistent. The Sheikh Hasina government engaged extensively with international press freedom organizations over fifteen years of increasingly authoritarian governance, using that engagement to maintain a degree of international legitimacy while simultaneously tightening its grip on the media through the DSA, license controls, and media ownership manipulation. The interim government of Muhammad Yunus has shown a similar pattern: proclaiming commitment to press freedom in international forums while simultaneously using financial investigations, anti-terrorism prosecutions, and National Media Commission proposals to maintain governmental influence over the media landscape.

18.6 The Geopolitics of Press Freedom: India, China, and Regional Dynamics

The international press freedom situation of Bangladesh cannot be fully understood without attention to the regional geopolitical context, particularly the relationships with India and China that shape Bangladeshi foreign policy and thereby affect the international constraints on press freedom advocacy.

India's relationship with press freedom in Bangladesh is complex and often uncomfortable. India is the most important regional power, the most significant neighbor, and a country with which Bangladesh has deep historical, cultural, and economic ties. India is also a country whose own press freedom record has deteriorated dramatically over the same period during which Bangladesh's record improved slightly in the RSF ranking: Bangladesh's 2025 RSF ranking of 149th placed it just two places above India's 151st ranking. Bangladesh Sangbad Sangstha An India that cannot itself claim to be a model of press freedom is in a weak position to pressure Bangladesh on this issue, and the bilateral relationship between the two countries, which involves complex negotiations over water sharing, trade, transit, and security, creates multiple pressure points that complicate any simple alignment of Indian and international press freedom advocacy interests.

China's growing economic presence in Bangladesh, which has accelerated with the BRI (Belt and Road Initiative) investments in infrastructure and the expansion of Chinese companies in the telecommunications, power, and manufacturing sectors, creates a different set of press freedom implications. China has actively promoted an alternative model of internet governance and media regulation that emphasizes state sovereignty over information flows and rejects the liberal model of press freedom. Bangladeshi journalists who report critically on Chinese companies or Chinese-funded projects face institutional pressures that differ from, and may be more insidious than, the direct legal threats associated with domestic security legislation.

The broader geopolitical shift represented by the rise of China, the relative decline of Western liberal hegemony, and the normative contestation between different models of governance and information freedom creates a challenging environment for the international press freedom

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regime. The consensus that previously made press freedom norms relatively unchallenged in international forums has eroded, as a growing number of countries actively resist the application of Western-derived press freedom standards to their domestic media environments. Bangladesh, as a country that is simultaneously dependent on both Western and Chinese investment and that has a political culture shaped by decades of authoritarian governance, is navigating this normative contestation in ways that are not yet fully resolved.

Chapter Nineteen: The Collapse of International Journalism Funding and Its Implications for Bangladesh

19.1 The Architecture of International Journalism Support Before 2025

To understand the significance of the international funding crisis for journalism that began in earnest in 2025, one must first understand the architecture of international journalism support that existed before that crisis. The system that had developed over the previous three decades was complex, involving multiple types of actors and multiple categories of support.

At the apex of the system was official bilateral development assistance, primarily from the United States through USAID and secondarily from European donors including Sweden, the Netherlands, Germany, and the United Kingdom. USAID's "Independent Media and Free Flow of Information" program category allocated significant resources annually to supporting independent journalism, investigative reporting capacity, journalist safety training, and legal defense in countries with threatened press freedom. The specific amounts were substantial: In 2024, $271.5 million in foreign assistance via USAID was categorized for "Independent Media and Free Flow of Information," of which an estimated $150 million directly funded journalism and media. Alliance magazine

This USAID funding flowed through a network of implementing organizations including Internews, the International Center for Journalists (ICFJ), the Thomson Reuters Foundation, BBC Media Action, and a range of smaller organizations specializing in regional or thematic aspects of journalism support. These organizations served as intermediaries that translated the political priorities of the US government's foreign assistance agenda into specific journalism training programs, grants for investigative reporting, equipment support, legal defense funds, and advocacy campaigns.

Alongside official bilateral support, a range of philanthropic foundations provided significant funding for journalism support, particularly for investigative and science journalism. The Bill and Melinda Gates Foundation funded health journalism training and investigative reporting on global health issues. The Open Society Foundations, associated with George Soros, funded media freedom advocacy, investigative journalism, and access to information initiatives globally. The Knight Foundation focused on journalism innovation and local news. The Earth Journalism Network, the climate journalism training organization supported by Internews, ran programs across the Global South including Bangladesh. The Kavli Foundation and the Robert Bosch

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Stiftung were among the foundations that had specifically supported science journalism capacity building. Nature

For Bangladesh specifically, international journalism support had funded important work including investigative reporting training programs at the Press Institute of Bangladesh, fellowship programs for Bangladeshi journalists to attend international climate conferences, grants for cross-border investigative journalism, journalist safety training particularly for women journalists and journalists covering conflict and security issues, and the digital tools and data literacy training programs that have enabled a small number of Bangladeshi media organizations to develop data journalism capabilities.

The relationships created through international journalism funding are complex and not without their own politics. Donor organizations have their own priorities and assumptions about what good journalism looks like, and those priorities do not always align with the specific needs and contexts of Bangladeshi journalism. The heavy emphasis of USAID-funded journalism programs on anti-corruption reporting and democratic accountability reflects the US government's foreign policy priorities, which may or may not map onto the most urgent journalistic needs in a specific country at a specific time. The focus of climate-focused journalism funders on particular types of environmental stories reflects their own programmatic priorities, which may crowd out coverage of environmental issues that are locally important but less legible to international funders.

Nevertheless, the system of international journalism support, for all its political complexity and thematic narrowness, was providing real resources for journalism that would not otherwise exist in countries like Bangladesh where the domestic economic model of journalism is too weak to support the most demanding forms of investigative and specialist reporting. The disruption of this system in 2025 therefore represents a genuinely serious crisis for journalism in the Global South.

19.2 The USAID Collapse and Its Consequences for Global Science Journalism

The Trump administration's decision to freeze and subsequently effectively abolish USAID in early 2025 was one of the most significant disruptions to the global journalism support ecosystem in the history of the sector. The decision, which eliminated the world's largest bilateral funder of journalism support almost overnight, created immediate crises for journalism organizations that had been dependent on USAID funding and set off a cascade of secondary effects through the ecosystem of journalism support organizations.

For organizations like the Earth Journalism Network, which had received between five and six grants from the US federal government including from both USAID and the State Department at the beginning of 2025, all of which were halted in January and then terminated later, the budget reduction of between one-quarter and one-third was devastating. Climate Tracker, which provides travel grants to climate meetings and offers training for climate journalists in the Global South, said it had only been able to fund some journalists from Latin America to attend the previous year's COP because of funding constraints. Nature

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The specific implications for science journalism in Bangladesh are severe. The climate journalism fellowship programs that had supported Bangladeshi journalists to attend international climate conferences and to produce in-depth evidence-based reporting on climate change drew significantly on internationally funded networks. The investigative health journalism training that had been supported through USAID-funded programs provided a significant portion of the formal training available to Bangladeshi health journalists. The environmental data infrastructure that some Bangladeshi environmental journalists had begun to use for data-driven reporting was partly maintained through internationally funded platforms.

The USAID collapse came at a time when funding for science journalism was already in decline, with foundations like the Kavli Foundation and Robert Bosch Stiftung having scaled back their media funding to focus on supporting science itself rather than its communication. Scientific American This double contraction, of both US government and major philanthropic foundation support for science journalism, represents a structural deterioration in the ecosystem that supports the most demanding forms of science journalism in the Global South.

The secondary effects of the USAID collapse extended beyond the direct funding cuts. Around 90 percent of digital independent media outlets in Bolivia relied on donor funding, and the majority had been cut. A study found that the vast majority of USAID journalism funding would disappear, potentially for good, from 2025 and beyond. In Asia, half the total funding received from USAID was gone. Alliance magazine The collapse of the system of journalism support organizations that had been built up over three decades means that even if some alternative funding sources emerge, the institutional knowledge, the professional networks, and the trained personnel that those organizations represented cannot be quickly or easily rebuilt.

19.3 The Dependency Theory Revisited: Aid, Journalism, and the Problem of Sustainability

The USAID collapse has forced an overdue reckoning with a fundamental structural problem in the model of international journalism support that had developed over the previous decades: the model was not sustainable, and its unsustainability was not incidental but structural. It was a model built on the assumption that wealthy-country governments and foundations would continue to subsidize journalism in poor countries indefinitely, without developing the conditions necessary for journalism to eventually support itself.

The dependency theory, which in the international development context describes the structural relationship between wealthy "core" countries and poor "periphery" countries that reproduces inequality and underdevelopment rather than promoting genuine development, is directly applicable to the relationship between international journalism funders and recipient countries like Bangladesh. A journalism ecosystem that depends on foreign donors for the resources to practice the most demanding forms of journalism is structurally vulnerable to exactly the kind of disruption that occurred in 2025. And the emphasis of foreign funders on their own programmatic priorities, rather than on building the institutional foundations for journalistic sustainability, means that the dependency tends to deepen rather than diminish over time.

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The alternative model implied by the dependency critique is one that prioritizes the development of domestic economic foundations for journalism: the development of public broadcasting funded independently of government, the cultivation of reader revenue through subscriptions and membership, the development of journalism philanthropies based in local rather than foreign resources, and the reform of advertising markets in ways that support rather than undermine editorial independence. Each of these alternatives faces serious obstacles in the Bangladeshi context. Public broadcasting is currently captured by government. Reader subscription revenue is limited by income levels and by the culture of free content that digital platforms have created. Local philanthropies for journalism do not yet exist in Bangladesh in any meaningful form. And the advertising market is dominated by industries whose interests in managing media coverage conflict with editorial independence.

None of these obstacles is insurmountable in principle. The development of sustainable domestic models for quality journalism in Bangladesh is not a fantasy. But it requires a long-term commitment to institutional development that goes far beyond the project-based approach of most international journalism support, and it requires political conditions in which media reform is a genuine rather than merely rhetorical priority.

19.4 European Alternatives and the Politics of Diversity in Journalism Funding

The collapse of USAID as a journalism funder has pushed the international journalism support community toward European alternatives, primarily bilateral development assistance from Sweden, Germany, and the Netherlands and multilateral support through the European Union's external assistance programs. These alternatives are genuinely important but also limited in their capacity to replace the scale of USAID support.

Sweden's Sida (Swedish International Development Cooperation Agency) has been one of the most consistent European supporters of press freedom and independent media globally, and its programs have included support for Bangladeshi journalism. UNESCO's World Press Freedom Day 2025 dialogue in Bangladesh was convened in partnership with the Embassy of Sweden, reflecting Sweden's continued commitment to press freedom promotion in the country. UNESCO The German development agency GIZ and the German foundations affiliated with political parties (the Friedrich Ebert Stiftung, the Konrad Adenauer Stiftung, and others) have also supported media development in Bangladesh.

But European alternatives to USAID journalism funding face their own structural problems. European bilateral aid has been declining as a percentage of national income across most European countries, with Germany's overseas development assistance falling by more than ten percent between 2023 and 2024 and France reducing its development aid budget by almost forty percent in 2025. The political pressures driving these reductions, including a shift toward prioritizing defense spending in response to the Russian invasion of Ukraine, are unlikely to be reversed quickly. The EU's external assistance programs are valuable but notoriously slow and bureaucratically complex, making them a poor substitute for the relatively flexible and responsive funding that USAID had provided.

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19.5 The Geopolitics of Science Funding: Who Controls the Agenda of Research in Bangladesh

The international dimensions of journalism funding are paralleled, and in some ways more profoundly shaped, by the international dimensions of science funding. The scientific research that Bangladeshi science journalists report on is funded through a complex international system that reflects the priorities and power structures of wealthy-country scientific establishments far more than the specific scientific needs and priorities of Bangladesh.

International scientific funding for Bangladesh comes primarily from several sources: bilateral research partnerships with wealthy-country universities and research institutions, multilateral scientific programs including those managed by the Consultative Group on International Agricultural Research (CGIAR), international health research organizations including the Wellcome Trust and the Bill and Melinda Gates Foundation, and the international arms of national research councils including the UK's Natural Environment Research Council and the US's National Institutes of Health and National Science Foundation.

The consequences of this funding structure for the agenda of scientific research conducted on and in Bangladesh are significant. Research priorities are shaped by what funding agencies consider important, and what funding agencies consider important is determined primarily by the scientific communities, policy priorities, and funding structures of wealthy countries. The consequence is a body of research on Bangladesh that over-represents certain topics (climate change impacts, agricultural biotechnology, reproductive health) that are priorities for international funders and under-represents others (occupational health, non-communicable disease epidemiology tailored to the Bangladeshi context, the social consequences of digital transformation) that are pressing Bangladeshi needs but of less interest to international funders.

The science journalist who reports on research about Bangladesh without understanding this funding structure is missing crucial context. When a study on climate change impacts in Bangladesh is funded by a UK research council, conducted primarily by UK researchers with Bangladeshi collaborators in a secondary role, published in a UK-based journal, and framed primarily for an international audience, the fact of this institutional position shapes what questions are asked, what methods are used, what findings are emphasized, and what recommendations are made. The science journalist who presents such research as simply "what science has found about Bangladesh" is eliding a set of power relations that are analytically important and practically consequential.

Chapter Twenty: Global Scientific Institutions and the Politics of Knowledge Production

20.1 The International Scientific Publishing System and Its Colonial Legacies

The international scientific publishing system is the primary mechanism through which scientific knowledge is formally communicated, evaluated, and certified as reliable. For the Bangladeshi

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science journalist, understanding this system, its structure, its gatekeeping mechanisms, and its power relations, is essential for evaluating the scientific literature she reports on and for understanding why certain findings receive attention while others do not.

The contemporary scientific publishing system is dominated by a small number of large commercial publishers, primarily Elsevier, Springer Nature, Wiley, and Taylor and Francis, that together control a substantial majority of the most prestigious scientific journals. These publishers generate revenues through subscription fees paid primarily by wealthy-country university libraries, through article processing charges paid by researchers who want their work to appear in open access form, and through the data services associated with their journal platforms. They are extraordinarily profitable enterprises: profit margins of thirty percent are not uncommon, making scientific publishing one of the most financially lucrative information businesses in the world.

The geographical concentration of this publishing system is striking. The most prestigious journals, the ones that appear at the top of citation rankings and that carry the greatest professional weight in academic careers, are overwhelmingly based in the United Kingdom and the United States. The editorial boards of these journals are dominated by scientists from wealthy countries. The peer reviewers they use are similarly concentrated. And the institutional affiliation of published authors systematically correlates with institutional wealth: research from Harvard, Oxford, and MIT is overrepresented relative to research from Dhaka, Cairo, or Lagos.

The implications for Bangladeshi science are substantial. Research conducted by Bangladeshi scientists at Bangladeshi institutions faces structural disadvantages in accessing the most prestigious publication venues. The resources needed for the laboratory equipment, data infrastructure, and research networks that support high-impact research are less available at Bangladeshi institutions than at wealthy-country competitors. The English-language writing skills required for successful submission to prestigious English-language journals are unevenly distributed. And the citation networks that determine which papers are noticed and which are ignored favor established centers over peripheral institutions.

These structural disadvantages mean that much of the most important research on Bangladeshi scientific problems, the research on water quality, on rice production, on public health, on disaster risk, that matters most to Bangladeshi citizens, is conducted not by Bangladeshi scientists but by international scientists who include Bangladesh in their research portfolios. This is not entirely a bad thing: international scientific attention to Bangladeshi problems has produced genuinely important research that has benefited the country. But it means that the science Bangladesh most needs is not the science that Bangladeshi scientists are best positioned to produce, and that the framing of that science reflects international rather than Bangladeshi priorities.

20.2 Open Access, Preprints, and the Democratization of Scientific Knowledge

The open access movement, which has sought to make scientific publications freely available to anyone with an internet connection, represents one of the most significant recent developments

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in the politics of scientific knowledge. The argument for open access is simple and compelling: scientific research that is funded by public money should be publicly available, and the paywall model that allows commercial publishers to profit from publicly funded research by restricting access to those who can pay is both unjust and counterproductive.

The implementation of open access has been more complex and less universally beneficial than its proponents initially hoped. The most common model of open access, which requires authors rather than readers to pay for publication through article processing charges, simply shifts the financial barrier from the consumption end to the production end. Researchers from wealthy institutions can easily afford the two to five thousand dollar article processing charges required by the most prestigious open access journals. Researchers from poor institutions often cannot, and the result is that open access has in some respects reinforced rather than challenged the concentration of scientific publication in wealthy-country institutions.

For Bangladeshi science journalists, the open access landscape nevertheless represents a significant improvement over the subscription-based model. A journalist who wants to read the scientific literature on dengue epidemiology, arsenic contamination, or climate change impacts in Bangladesh can now access a substantial and growing proportion of that literature for free, without requiring her news organization to maintain expensive library subscriptions. The growth of preprint servers, particularly in biology and medicine (bioRxiv, medRxiv) and in the social sciences (SSRN), has further expanded access to scientific findings, though it also requires journalists to exercise greater caution about reporting research that has not yet been through peer review.

The COVID-19 pandemic accelerated the preprint culture in ways that created both opportunities and challenges for science journalism. The rapid publication of preliminary research findings on preprint servers, before peer review, allowed scientists to share results quickly and enabled a form of real-time scientific conversation that was valuable for the pandemic response. But it also produced a flood of research of varying quality, some of which was widely reported in the media before its limitations were identified, contributing to the infodemic that complicated public health communication during the pandemic.

20.3 CGIAR and the Politics of International Agricultural Science

The Consultative Group on International Agricultural Research (CGIAR) is one of the most important international scientific institutions for Bangladesh, and understanding its structure, its history, and its politics is essential for the agricultural science journalist covering Bangladesh's food system.

CGIAR is a partnership of fifteen international agricultural research centers, including the International Rice Research Institute (IRRI), the World Vegetable Center, the International Maize and Wheat Improvement Center (CIMMYT), and the International Livestock Research Institute, that together conduct and support agricultural research primarily oriented toward the food systems of low and middle-income countries. Founded in 1971, CGIAR was the primary institutional vehicle for the Green Revolution, developing and distributing the high-yielding

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varieties of rice and wheat that dramatically increased food production in Asia, including Bangladesh.

The CGIAR system has been extensively analyzed by scholars of the political economy of international agricultural science, and the findings are instructive for science journalists who want to understand the institutional context of agricultural research. The system is governed by a board that includes representatives of the wealthy-country governments and foundations that fund it, giving donors substantial influence over research priorities. The research agenda has historically reflected the priorities of these donors, which include the US government (through USAID and the Department of Agriculture), the UK (through the Foreign, Commonwealth and Development Office), and major foundations including the Gates Foundation.

One of the most significant critiques of CGIAR's research agenda is that it has systematically prioritized technological approaches to agricultural development, particularly the development of improved varieties and associated inputs, over agroecological and community-based approaches. This reflects both the institutional incentives of a research system organized around scientific expertise and the commercial interests of seed companies and agrochemical manufacturers that benefit from the adoption of technology-intensive agricultural systems. The critique does not imply that CGIAR's technology-focused research has been without value: the contributions of IRRI to rice productivity in Bangladesh have been genuinely important. But it suggests that the research agenda is shaped by institutional and commercial interests that are not fully aligned with the interests of smallholder farmers in Bangladesh and similar countries.

The science journalist who reports on agricultural research without understanding these institutional dynamics is missing a crucial layer of context. When IRRI announces a new drought-tolerant rice variety, the announcement deserves scrutiny: Who funded the research? What specific drought conditions was the variety developed for, and how well do they match the specific drought conditions experienced by farmers in different parts of Bangladesh? What intellectual property arrangements govern access to the variety, and do those arrangements favor smallholder farmers or commercial seed companies? What are the agronomic trade-offs involved in the variety, and what do farmers who have tried it report about its performance in practice?

These questions are not hostile to IRRI or to the concept of international agricultural research. They are the questions that any competent agricultural science journalist should ask about any agricultural research finding. But they require a level of institutional knowledge and scientific literacy that most agricultural journalists have not developed.

20.4 WHO, Pandemic Preparedness, and the Science Journalist's Role in Global Health Governance

The World Health Organization's role in global health governance, and specifically in the governance of international responses to pandemic threats, has been transformed by the experience of COVID-19 in ways that are directly relevant to the health science journalist in Bangladesh.

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The COVID-19 pandemic exposed serious weaknesses in the WHO's capacity to coordinate the international response to a rapidly spreading pathogen. The organization's initial deference to China's characterization of the outbreak, its slow declaration of a public health emergency of international concern, and its initial guidance on masking and transmission were all subjects of legitimate scientific and political criticism. The subsequent development of the COVAX facility for equitable vaccine distribution demonstrated both the potential for international coordination in pandemic response and the severe limitations of that coordination when it confronted the vaccine nationalism of wealthy countries that prioritized their own populations over global equity.

For Bangladesh specifically, the COVID pandemic illustrated the specific vulnerabilities of a country that is a price-taker rather than a price-setter in global pharmaceutical markets. The delay in vaccine access that Bangladesh experienced in the early months of the global vaccine rollout, while wealthier countries had secured sufficient doses for multiple times their populations, was a manifestation of the same structural inequalities that shape so many dimensions of Bangladesh's relationship with the international scientific and health system.

The pandemic also demonstrated the critical importance of science journalism for public health during emergencies. Countries with well-developed science journalism traditions, where the public was accustomed to receiving accurate and nuanced scientific information from trusted media sources, generally managed the information environment of the pandemic more effectively than countries where the science media was weak or where trust in institutional sources was low. Bangladesh's relatively weak science journalism tradition, combined with its very active social media environment and its history of institutional information management that discouraged public trust in official sources, created a particularly challenging information environment during the pandemic.

The ongoing development of the Pandemic Treaty under WHO auspices, negotiations for which were underway throughout 2024 and 2025, represents another major international policy process in which Bangladeshi interests are at stake and which demands sophisticated science journalism coverage. The treaty negotiations involve contentious issues including pathogen sharing and benefit sharing, the intellectual property rights of pharmaceutical companies in pandemic technologies, and the governance structure for international pandemic response. These are issues where the interests of Bangladesh and other low-income countries often diverge sharply from those of wealthy countries and pharmaceutical manufacturers, and the outcome of the negotiations will determine Bangladesh's access to pandemic countermeasures in future emergencies.

20.5 The IPCC and Climate Science Communication

The Intergovernmental Panel on Climate Change (IPCC) is one of the most important international scientific institutions for Bangladeshi climate journalists. The IPCC's Assessment Reports, which synthesize the state of scientific knowledge on climate change, its impacts, and response options, are the authoritative scientific reference documents for international climate policy and are extensively cited in climate journalism globally.

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For Bangladeshi climate journalists, the IPCC reports present both opportunities and challenges. The opportunity is that the reports provide comprehensive, authoritative, and freely available syntheses of the scientific literature that are directly relevant to Bangladesh's situation. The sections on South Asian climate impacts, on the specific vulnerabilities of delta regions, and on the health consequences of climate change are directly applicable to Bangladeshi reporting and provide a scientific foundation that is harder to challenge than individual research papers. The challenge is that the reports are extremely long, technically complex, and written primarily for a scientific and policy audience rather than for journalistic use.

The science journalist who wants to use IPCC reports effectively must develop the capacity to navigate their complex structure, to identify the sections most relevant to specific Bangladeshi stories, to understand the confidence levels and uncertainty ranges associated with specific findings, and to translate the technical language of the reports into accessible prose without distorting their meaning. This requires a level of climate science literacy that most Bangladeshi journalists have not systematically developed.

A particularly important issue for Bangladeshi climate journalism is the IPCC's treatment of loss and damage, the concept that countries and communities that are particularly vulnerable to climate change and that bear disproportionate costs of its consequences deserve compensation from the countries that have historically contributed most to the atmospheric greenhouse gas concentrations driving that change. This is both a scientific and a political-philosophical question of extraordinary importance for Bangladesh, which has contributed less than 0.3 percent of cumulative global carbon emissions but faces some of the most severe climate consequences on earth. The Bangladeshi science journalist who covers climate change without engaging with the loss and damage dimension is missing the most politically charged and arguably the most morally urgent dimension of the story.

Chapter Twenty-One: The Transnational Digital Information Environment

21.1 Platform Power and the Bangladeshi Information Ecosystem

The global social media platforms, primarily Meta's Facebook and Instagram, Alphabet's Google and YouTube, and ByteDance's TikTok, are now the dominant channels through which most Bangladeshi internet users receive information. Their relationship with Bangladeshi journalism is one of the most important and most underanalyzed dimensions of the international context of science journalism in Bangladesh.

The economic relationship between the platforms and Bangladeshi journalism is fundamentally asymmetric. The platforms distribute content produced by Bangladeshi journalists to Bangladeshi audiences but capture a large majority of the digital advertising revenue associated with that distribution. They have effectively colonized the digital advertising market that was previously available to print and broadcast journalism, leaving Bangladeshi news organizations with a fraction of the digital revenue that their audiences would theoretically justify.

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The Reuters Institute's 2025 Digital News Report documented how an accelerating shift towards consumption via social media and video platforms was further diminishing the influence of institutional journalism globally and supercharging a fragmented alternative media environment containing podcasters, YouTubers, and TikTokers. Populist politicians were increasingly able to bypass traditional journalism by labelling it as fake news and threatening legal action, putting additional pressure on media organizations and their business models. Reuters Institute for the Study of Journalism

These global trends manifest in Bangladesh in specifically Bangladeshi ways. The digital platform ecosystem in Bangladesh is dominated by Facebook to a degree that is unusual even by Global South standards. Facebook in Bangladesh is not just a social network where news is shared: it is the primary internet application for many users, particularly those accessing the internet through mobile devices with limited data plans. The Facebook Lite application, optimized for low-bandwidth connections, has made Facebook the de facto internet for tens of millions of Bangladeshis who might otherwise not engage with the broader internet.

This extreme platform concentration creates specific risks for the Bangladeshi information ecosystem. It means that a single company's decisions about content moderation, algorithmic ranking, and advertising policy have disproportionate influence over what information reaches Bangladeshi audiences. It means that the failures of Facebook's trust and safety operations in Bangla, which have been extensively documented, have disproportionate consequences for Bangladeshi users. And it means that Bangladeshi journalism organizations are extraordinarily dependent on a platform that has little accountability to Bangladeshi law or Bangladeshi users.

21.2 Algorithmic News and the Problem of Science Visibility

The algorithms that govern what content appears in users' news feeds and search results are among the most powerful determinants of which news stories receive attention and which are ignored. Understanding how these algorithms work, at least in their broad outlines, is increasingly important for science journalists who want their work to reach audiences.

The basic operating principle of the major platform algorithms is engagement optimization: they show users content that their behavioral data suggests will produce clicks, shares, comments, and time-on-platform. This principle creates systematic incentives that are problematic for science journalism. Science stories that are accurate, nuanced, and appropriately uncertain are generally less engaging than science stories that are sensational, definitive, and emotionally provocative. False health claims that generate fear or excitement typically attract more engagement than accurate health information that is relevant but undramatic. Climate stories that portray catastrophic scenarios perform better on engagement metrics than climate stories that accurately convey the complex probability distributions of future warming.

The result is an algorithmic environment that systematically disadvantages the most responsible science journalism and advantages the most irresponsible. A Bangladeshi health journalist who produces an accurate, nuanced, and appropriately qualified piece on the effectiveness of a new vaccine is competing for algorithmic attention with a Facebook post claiming that the vaccine

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contains microchips, and the Facebook post will typically win in engagement terms because it is more emotionally provocative.

The response of the platforms to this problem has been to develop content moderation and ranking policies that attempt to reduce the distribution of known false information and to elevate content from "authoritative sources." But these policies are implemented through a combination of artificial intelligence and human review that is consistently less effective in non-English languages, including Bangla, than in English. Mobs armed with sticks and petrol torches attacked the offices of The Daily Star and Prothom Alo in December 2025, setting fire to vehicles and pushing towards the main press buildings, forcing both papers to suspend publication for the first time in their histories. An August 2025 article in the Al Jazeera Journalism Review noted that reforms had been introduced to undo the Hasina legacy of censorship, but the environment remained hostile, with mob intimidation replacing direct state bans. The New Humanitarian

The relationship between platform algorithmic amplification of inflammatory content and mob violence against journalists is not coincidental. The platforms' failure to adequately moderate content in Bangla means that incitement to violence against news organizations that publish content unpopular with specific political movements can spread rapidly and efficiently across the platform network, reaching and mobilizing audiences before any journalistic or legal response is possible.

21.3 AI and the Generative Disruption of the News Ecosystem

The rapid development of generative artificial intelligence since 2022 has created a new set of challenges and opportunities for journalism globally that are beginning to manifest in Bangladesh in ways the science journalism community must understand.

The Reuters Institute's 2025 research found that people aged 18 to 24 were almost three times more likely to use generative AI than those aged 55 and over, with 42 percent of young people saying they used AI chatbots to get news and information every week. The report also found that most journalists who used AI professionally (62 percent) saw it as a big threat to journalism, with only 15 percent seeing it as a big opportunity. Additionally, 56 percent of surveyed journalists said they used AI professionally at least once a week. Reuters Institute for the Study of Journalism

For science journalism specifically, generative AI creates both opportunities and risks that deserve careful analysis. The opportunities include the use of AI tools for processing large scientific datasets, for extracting relevant information from lengthy scientific documents, for translating scientific material across languages, and for generating initial drafts of routine science news that can then be checked, verified, and contextually enriched by human journalists. These applications can increase the productivity of science journalists and potentially enable them to cover a larger range of scientific developments than would otherwise be possible.

The risks are more fundamental. Generative AI systems can produce fluent, confident-sounding text about scientific topics that is factually incorrect, that misrepresents the state of scientific

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knowledge, or that presents contested claims as settled. AI systems that are trained primarily on English-language content may produce particularly unreliable outputs when asked about Bangladeshi scientific issues that are not well-represented in their training data. And the widespread use of AI-generated content in media environments can degrade the overall quality of information in ways that are hard to detect and that undermine the institutional credibility of journalism.

The Reuters Institute's Journalism, Media and Technology Trends and Predictions 2026 report found that press freedom globally had fallen to its worst level since the RSF Index began, with a key driver being the worsening economic position linked to declining advertising and reader revenue making news media more dependent on government or its supporters. Simultaneously, existing and new legislation including foreign agent, cybercrime, and national-security-type laws were being used to make journalism harder and more dangerous. Reuters Institute

The specific implications of AI for Bangladeshi science journalism include the risk that AI-generated content, in Bangla or English, about Bangladeshi scientific topics will proliferate in social media and potentially in media outlets that are under economic pressure to reduce editorial costs. AI-generated misinformation about health, agriculture, and environmental topics, tailored to exploit specific Bangladeshi anxieties and optimized for social media engagement, could be produced at scale and distributed through the same platform channels that already show demonstrated weaknesses in moderating harmful content in Bangla.

The science journalist's responsibility in this environment is both to understand AI's capabilities and limitations as a journalistic tool and to develop the critical capacity to identify and challenge AI-generated content that misrepresents science. This requires familiarity with the specific failure modes of current AI systems in their treatment of scientific content, an understanding of how AI-generated content can be identified and verified, and a commitment to the kind of primary source verification and community engagement that AI systems cannot replicate.

21.4 Sovereignty, Regulation, and the State's Relationship with Global Platforms

The question of how states should regulate the global platforms that dominate their information ecosystems is one of the most contested questions in contemporary information policy, and Bangladesh's approach to this question has significant implications for the science journalism community.

The Bangladeshi government's relationship with the global platforms has been shaped by several sometimes contradictory imperatives. The government has wanted to use the platforms as tools for its own political communication, which has created an incentive to maintain good relationships with the platforms and to avoid regulatory actions that the platforms would resist. It has also wanted to be able to compel the platforms to remove content that it considers harmful or threatening to public order, which has created an incentive to develop legal frameworks that impose content removal obligations on platform operators.

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The specific regulatory framework that has emerged in Bangladesh, primarily through the Digital Security Act of 2018, the Cyber Security Act of 2023, and the 2025 Cyber Security Ordinance, creates obligations on platform operators to comply with government content removal requests. But the platforms' actual compliance with these requests is inconsistent and often inadequate, partly because the platforms' global content moderation systems are not well-designed for the specific legal and political context of Bangladesh and partly because the platforms' relationship with any single government's regulatory demands is necessarily complex given the incompatibility of different national regulatory frameworks.

ARTICLE 19's submission to the Bangladesh Media Reform Commission in February 2025 specifically highlighted the draft National Artificial Intelligence Policy 2024, which if passed would enable excessive surveillance, content regulation, and potential algorithmic biases that could suppress dissent and independent journalism. ARTICLE 19 also called on the government to ensure the free flow of information by avoiding internet shutdowns, content blocking, and filtering, and to protect citizens' right to internet freedom and access to information. ARTICLE 19

The internet shutdown experience in Bangladesh is particularly instructive. During periods of political crisis, including the July-August 2024 uprising, the Bangladeshi government imposed internet shutdowns of varying scope and duration that effectively severed the country's population from global information networks. These shutdowns, while technically limited in duration, had severe consequences for the journalistic community's ability to report on rapidly developing events, to communicate with international colleagues and media organizations, and to receive and share information about what was happening.

Internet shutdowns are increasingly documented and condemned by international human rights organizations, and the evidence that they are effective instruments for controlling information is poor: they prevent ordinary citizens from accessing information while well-resourced political and security actors typically maintain access through other means. But they remain popular instruments in the repertoire of governments facing political crises, and the Bangladeshi government's willingness to use them reflects a view of the internet as a platform for information that is tolerated rather than protected, that can be shut down when it becomes politically inconvenient.

Chapter Twenty-Two: International Human Rights Law, Press Freedom Jurisprudence, and the Bangladeshi Science Journalist

22.1 The ICCPR and Its Relevance to Bangladeshi Journalism

The International Covenant on Civil and Political Rights, which Bangladesh ratified in 2000 and which therefore constitutes binding international law applicable to Bangladesh, provides the primary international legal framework for press freedom. Article 19 of the ICCPR guarantees freedom of opinion and expression, including the freedom to seek, receive, and impart

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information and ideas of all kinds through any media. Article 19(3) permits restrictions on this freedom, but only those that are provided by law, are necessary for the purposes listed in the article (which include respect for the rights of others and protection of national security, public order, public health, or morals), and meet the test of proportionality.

The Human Rights Committee, the body of independent experts that monitors states' compliance with the ICCPR, has developed a substantial jurisprudence interpreting these provisions through its General Comments and its consideration of individual communications. General Comment 34, adopted in 2011, provides the most comprehensive statement of the Committee's interpretation of Article 19 and is directly relevant to evaluating the consistency of Bangladeshi digital security and defamation law with international standards.

General Comment 34 establishes several principles of direct relevance to Bangladeshi journalism. It states that the prohibition on prior censorship must be strictly maintained. It holds that criminal defamation law is generally inconsistent with the Covenant and that civil liability rather than criminal punishment is the appropriate remedy for reputational harm. It states that the public interest in government accountability creates a strong presumption in favor of disclosure and against restrictions on reporting on government activities. And it is explicit that limitations on freedom of expression that serve merely to protect governments and their officials from embarrassment are not within the permitted restrictions under Article 19(3).

Measured against these international standards, a significant portion of Bangladesh's legal framework for media regulation is inconsistent with the country's international human rights obligations. The criminal defamation provisions of the Penal Code, the provisions of the Cyber Security Ordinance that criminalize vaguely defined categories of online speech, the Official Secrets Act's restrictions on reporting on government activities, and the anti-terrorism law's application to journalists whose publications are characterized as propaganda all fail to meet the necessity and proportionality requirements of Article 19(3).

22.2 The Gap Between International Standards and Domestic Implementation

The gap between the international human rights standards that Bangladesh has formally accepted by ratifying the ICCPR and the actual legal framework and enforcement practices that govern Bangladeshi journalism is enormous. This gap is not unique to Bangladesh: it characterizes the relationship between formal international human rights commitments and practical implementation in a large number of countries. But understanding the specific mechanisms through which the gap is maintained and the specific arguments that are offered to justify it is essential for the science journalist who wants to engage seriously with the legal and jurisprudential dimensions of her professional situation.

The primary mechanism through which the gap is maintained is interpretive: the Bangladeshi government, like many governments with inconsistent human rights records, offers interpretations of its international obligations that are much narrower than those provided by the Human Rights Committee and other international human rights bodies. The government argues that its digital security legislation is consistent with Article 19(3) because it is provided by law

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and is necessary for the protection of national security and public order. International human rights bodies have consistently rejected this argument, finding that the legislation fails the necessity and proportionality tests, but the government has not treated these findings as legally binding.

A secondary mechanism is institutional: the Bangladeshi domestic courts, while they have shown occasional willingness to apply international human rights standards in specific cases, do not systematically enforce international obligations in ways that constrain legislative or executive behavior. The relationship between domestic courts and international human rights obligations in Bangladesh is thus different from the relationship in countries like India or the United Kingdom, where a more developed constitutional culture of human rights adjudication has created stronger domestic enforcement mechanisms for at least some international standards.

The third mechanism is political: the international sanctions available for press freedom violations are primarily reputational rather than material. The Human Rights Committee can issue findings of violations, the RSF can rank Bangladesh low in its index, the IFJ and CPJ can issue condemnations, but none of these responses imposes serious material costs on the Bangladeshi government. The linkage between press freedom and trade policy, aid, and investment that might create stronger material incentives for compliance has historically been weak, and the current geopolitical environment, in which both Western democracies and China compete for influence in countries like Bangladesh, makes it easier for governments to resist international pressure by playing potential partners against each other.

22.3 The UN Special Rapporteur on Freedom of Expression: A Resource for Journalists

The United Nations Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression is an independent expert appointed by the UN Human Rights Council who monitors press freedom globally, receives complaints from journalists and civil society organizations, and engages in dialogue with governments about specific cases and systemic concerns.

The Special Rapporteur is not a court and cannot make legally binding decisions. But the Rapporteur's communications with governments, public statements, and country reports carry significant moral and reputational weight and can be valuable tools for journalists and advocacy organizations trying to bring international attention to specific press freedom violations.

For Bangladeshi science journalists, understanding the Special Rapporteur mechanism is useful in several practical ways. The Rapporteur's prior statements and thematic reports on issues including the protection of journalists' sources, the compatibility of digital security legislation with Article 19, the obligations of internet intermediaries under international human rights law, and the use of anti-terrorism legislation against journalists all provide authoritative international legal analysis that can be cited in reporting on press freedom issues. The possibility of submitting individual communications to the Special Rapporteur, while not providing immediate legal relief, is a mechanism for bringing specific cases to international attention in ways that can create political pressure for resolution.

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22.4 Regional Human Rights Mechanisms and the Absence of an Asian Regional Court

One of the distinctive features of the international human rights landscape relevant to Bangladeshi journalism is the absence of a regional human rights court with jurisdiction over Bangladesh. Unlike Europe (European Court of Human Rights), the Americas (Inter-American Court of Human Rights), and Africa (African Court on Human and Peoples' Rights), Asia does not have a regional human rights court. The Association of Southeast Asian Nations (ASEAN) has established an intergovernmental Commission on Human Rights, but Bangladesh is not an ASEAN member, and the Commission has in any case very limited capacity to address individual rights violations.

The absence of a regional court means that the only international adjudicative mechanism available to Bangladeshi journalists who believe their rights have been violated is the individual communication procedure under the ICCPR Optional Protocol, which Bangladesh has not ratified. Bangladesh has therefore not accepted the jurisdiction of the Human Rights Committee to consider individual complaints from Bangladeshi citizens, which means that the international legal accountability mechanisms available to jailed or persecuted Bangladeshi journalists are limited to the political pressure mechanisms described above.

This legal gap is significant both for practical purposes and for broader arguments about the international human rights system's adequacy for protecting press freedom in Asia. Scholars of international human rights law have argued that the absence of a regional court is one of the most significant structural weaknesses of the Asian human rights architecture, and efforts to develop regional human rights mechanisms within SAARC (the South Asian Association for Regional Cooperation) have thus far produced very limited results.

Chapter Twenty-Three: South-South Journalism Cooperation and Alternatives to Dependency

23.1 The Concept and Practice of South-South Journalism Networks

The concept of South-South cooperation, which refers to the exchange of knowledge, experience, and resources between countries of the Global South rather than the North-South transfer model that characterizes most international development assistance, has been applied to journalism in a growing number of initiatives that are particularly relevant to Bangladesh.

South-South journalism networks operate on the premise that journalists in countries with similar levels of development, similar political constraints, similar economic pressures, and similar journalistic traditions have more to learn from each other's experience than from the practices of journalists in wealthy countries with very different institutional, economic, and political environments. A Bangladeshi health journalist covering access to essential medicines has more to learn from a Nigerian journalist who has investigated pharmaceutical pricing in sub-Saharan Africa than from a British journalist writing about the National Health Service. A Bangladeshi

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climate journalist covering the specific vulnerabilities of delta regions has more to learn from a Vietnamese journalist covering the Mekong Delta than from an American journalist covering coastal flooding in Miami.

The Earth Journalism Network, while not exclusively a South-South organization, has developed significant South-South dimensions in its programming, creating connections between environmental journalists across Asia, Africa, and Latin America. Organizations like the Asian College of Journalism in Chennai, the IIPMR (International Institute for Political Media Research), and regional journalism networks within SAARC have created spaces for South Asian journalists to exchange experience and develop common frameworks for addressing shared professional challenges.

For Bangladeshi science journalism, South-South networks offer several specific advantages. The experience of journalists in countries facing similar institutional constraints, specifically the combination of legal restrictions on critical reporting, economic precarity in the media sector, and inadequate science education in journalism training, is more directly applicable than the experience of Western journalists who operate in very different institutional environments. The scientific research relevant to the specific challenges facing Bangladesh, including research on tropical disease, on monsoon agriculture, on coastal vulnerability, and on post-colonial institutional development, is often conducted in other Global South countries, and South-South journalism networks can facilitate access to that research and to the scientists who conduct it.

23.2 Regional Climate Journalism: COP and the Voice of the South

The annual United Nations climate conferences, known as COPs (Conferences of the Parties to the UN Framework Convention on Climate Change), have become important venues for Bangladeshi climate journalism, providing access to international climate science, policy negotiations, and a global journalism community. But the relationship between Global South climate journalists and the COP process is complicated in ways that deserve analysis.

The climate journalism community at COPs is dominated numerically by journalists from wealthy countries, who have greater institutional resources for international travel and who are more likely to be accredited by major news organizations with the resources to maintain correspondents at international events. The perspectives, stories, and framings that dominate global climate journalism coverage therefore tend to reflect the priorities of wealthy-country audiences rather than the specific concerns and vulnerabilities of countries like Bangladesh.

At the same time, the COP process has become increasingly important as a forum for amplifying the voices of vulnerable countries, particularly on the issue of loss and damage, which is of direct relevance to Bangladesh. The establishment at COP28 in Dubai in 2023 of a Loss and Damage Fund, while still inadequate in capitalization and governance relative to the scale of the problem, represented a significant political achievement for which vulnerable countries including Bangladesh had advocated for years. The Bangladeshi climate journalist who covered this development was covering a story that was directly relevant to the hundreds of millions of

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Bangladeshis whose livelihoods and futures are affected by climate change, and covering it in a way that connected the international negotiating process to its domestic consequences.

The CPRD-TCW Reporting Fellowship 2025 was specifically designed to strengthen climate journalism in Bangladesh by supporting in-depth, evidence-based reporting ahead of COP30, scheduled in Belem, Brazil. The program reflected a growing recognition that Bangladesh's climate challenges, innovations, and leadership need to be well-represented in global climate discussions. The Business Standard

23.3 Collaborative Investigative Journalism: Cross-Border Projects and Their Potential

Cross-border collaborative investigative journalism, in which journalists from multiple countries work together on investigations that span national borders, is one of the most significant innovations in investigative journalism of the past decade and one that has particular relevance for Bangladesh.

The most prominent examples of cross-border investigative journalism, including the Panama Papers, the Pandora Papers, and the Paradise Papers (all investigations into offshore financial secrecy coordinated by the International Consortium of Investigative Journalists), have demonstrated the capacity of internationally coordinated investigations to expose financial structures that are designed to exploit the gaps between different national legal systems. These structures are directly relevant to Bangladesh: the export of illicit capital from Bangladesh through offshore accounts and opaque corporate structures, the financial flows associated with garment industry tax evasion and political corruption, and the money laundering practices of politically connected businesspeople all involve cross-border financial architectures that no single country's journalism can fully investigate.

For science journalism specifically, cross-border collaboration offers additional advantages. Many of the most important scientific stories in Bangladesh involve international dimensions that can only be fully reported through international collaboration. The arsenic story involves hydrogeological research conducted by British, American, and Bangladeshi scientists whose collaboration required international coordination. The climate change story involves global atmospheric science that connects Bangladeshi vulnerability to emissions produced primarily in other countries. The pharmaceutical story involves multinational corporations whose practices in Bangladesh are shaped by their global regulatory strategies and whose data on drug safety and efficacy is produced in research centers worldwide.

23.4 SAARC Journalism and the Unfulfilled Potential of Regional Cooperation

The South Asian Association for Regional Cooperation (SAARC), which includes Bangladesh, India, Pakistan, Nepal, Bhutan, the Maldives, and Sri Lanka, represents a potential institutional framework for regional journalism cooperation that has been largely unrealized. The political tensions within SAARC, particularly the India-Pakistan conflict that has paralyzed the organization's political functions for extended periods, have also constrained its potential for journalism cooperation.

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Nevertheless, the case for South Asian journalism cooperation is compelling. The countries of South Asia share scientific problems of enormous significance, including the shared hydrology of the major river systems that determine water availability for agriculture and human consumption, the shared atmospheric conditions that produce the monsoon system on which South Asian agriculture depends, the shared vulnerabilities to climate change as a region with both major Himalayan glaciers (the water towers of Asia) and extensive low-lying coastal areas, and the shared public health challenges of dengue, tuberculosis, and non-communicable disease burden.

A well-functioning South Asian journalism network focused on science could develop significant capacity for coordinated coverage of these shared scientific challenges, enabling journalists in different countries to share data, sources, expertise, and published findings in ways that would strengthen all of their individual coverage. The data journalism capabilities that are developing in different South Asian newsrooms could be pooled and shared in ways that would reduce duplication and enable more sophisticated regional analysis. And the specific expertise of journalists in different countries could be shared through exchanges, collaborative projects, and informal professional networks that would build the overall scientific literacy of the South Asian journalism community.

Chapter Twenty-Four: The New Information Order Debate and Bangladesh

24.1 The MacBride Report, NWICO, and Their Contemporary Relevance

The debate about the New World Information and Communication Order (NWICO), which emerged in the 1970s and 1980s as part of the broader Non-Aligned Movement's challenge to the dominance of Western institutions in global affairs, remains directly relevant to understanding the international dimensions of journalism in Bangladesh, even though the specific political form it took has long since passed.

The MacBride Commission, established by UNESCO in 1976 under the chairmanship of Sean MacBride (Irish Nobel Peace Prize laureate and former Secretary General of the International Commission of Jurists), was tasked with studying communication problems in the world. Its 1980 report, "Many Voices, One World," made a series of recommendations aimed at redressing the fundamental inequality in global communication flows: the fact that information produced in the wealthy North dominated global media while the perspectives, experiences, and voices of the Global South were systematically marginalized.

The NWICO debate generated enormous controversy, eventually contributing to the withdrawal of the United States and the United Kingdom from UNESCO in the 1980s over concerns that the proposed New Information Order would restrict press freedom. The Western critique of NWICO was not without substance: some of the governments most loudly supportive of the New Information Order were among the most repressive in the world, and their advocacy for

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"developing country sovereignty" in information matters was transparently a defense of their own censorship practices.

But dismissing the NWICO debate as simply an authoritarian attack on press freedom misses the genuine substance of the critique of global communication inequality that the MacBride report advanced. The fundamental point, that the global information system is structured in ways that systematically advantage wealthy-country perspectives and institutions while marginalizing the voices and concerns of the Global South, remains valid. The specific mechanisms of global communication inequality have changed dramatically since 1980, with commercial platforms replacing national broadcasters and wire services as the primary global information channels, but the structural inequality has if anything deepened.

The contemporary relevance of the NWICO debate for Bangladeshi science journalism is multidimensional. The global scientific publishing system that marginalizes Bangladeshi researchers and Bangladeshi science is a specific instance of the broader communication inequality that NWICO identified. The platform governance system that makes decisions affecting hundreds of millions of Bangladeshi users without meaningful Bangladeshi input is another instance. The international funding system that shapes the agenda of Bangladeshi journalism in accordance with wealthy-country priorities is a third. And the dominance of English as the language of global science communication, which creates structural disadvantages for Bangla-speaking scientists and journalists, is a fourth.

24.2 The Right to Communicate and Its Implications for Science Journalism

One of the concepts that emerged from the NWICO debate and that has been given new life by the digital revolution is the "right to communicate": the idea that the formal right to freedom of expression, focused on protection against government restriction of speech, is insufficient and must be complemented by a positive right to the conditions necessary for effective communication, including access to communication infrastructure, media literacy, and participation in the governance of communication systems.

The right to communicate, understood as a positive entitlement to the conditions for effective participation in the information society, is directly relevant to the specific situation of science communication in Bangladesh. The formal right to freedom of expression is inadequate as a framework for addressing the structural inequalities that prevent Bangladeshi scientists from publishing in prestigious international journals, that prevent rural communities from accessing the scientific information relevant to their health and agricultural decisions, and that prevent Bangladeshi journalists from covering science at the level of sophistication that Bangladeshi society needs.

A right to communicate framework would instead ask: What conditions are necessary for Bangladeshi citizens, scientists, and journalists to participate effectively in the global information society? What institutional arrangements, educational investments, legal frameworks, and technological infrastructures are required? And who bears responsibility for creating and maintaining those conditions?

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24.3 Data Sovereignty and the Science Journalist's Stake in Information Governance

The concept of data sovereignty, the idea that states should have meaningful control over the data generated by their citizens and that this data constitutes a form of national resource that should not be extracted by foreign corporations without appropriate governance, has emerged as an important framework in international information policy debates, with direct implications for science journalism.

Bangladeshi citizens' behavior on global digital platforms generates enormous quantities of data that are harvested by those platforms for commercial purposes and that may also be accessed by state intelligence agencies under the data-sharing arrangements that govern international intelligence cooperation. The data generated by Bangladeshi internet users about their information consumption, their health queries, their agricultural practices, and their economic transactions is potentially a significant source of insight about Bangladeshi society that could be used for purposes ranging from public health research to commercial targeting to political surveillance.

The governance of this data, the legal frameworks that determine who can access it, under what conditions, for what purposes, and with what protections for individual privacy, is an important policy issue that is directly relevant to science journalism. The science journalist who investigates a public health emergency, for example, may want to access aggregated data about health-seeking behavior on digital platforms that could reveal the true scale of an outbreak earlier than official surveillance systems. But accessing such data requires relationships with platform companies and legal frameworks for data sharing that are not currently well-developed in Bangladesh.

Chapter Twenty-Five: The Election of 2026 and Journalism's Test

25.1 The Election and the Media: A Critical Juncture

The Bangladeshi national election of 2026, the first election following the fall of the Hasina government and the interim period under Muhammad Yunus, represents a critical juncture for Bangladeshi journalism and for the science journalism community specifically. The conduct of this election, and specifically whether it was accompanied by genuine press freedom or by a new cycle of media manipulation and journalist persecution, will shape the conditions for journalism in Bangladesh for years to come.

The Committee to Protect Journalists joined five civil society organizations in a letter urging Bangladesh's interim government to strengthen protection of human rights and press freedom ahead of the 2026 elections. The organizations called on the interim government to safeguard press freedom, protect journalists from arbitrary arrest and detention, and end harassment and violence against the media. Committee to Protect Journalists

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A December 2025 study by Digitally Right found that 89 percent of Bangladesh's journalists feared physical assault during pre-election reporting, with verbal harassment also pervasive. Reporters were hiding their press cards, avoiding covering political rallies, and relying on party-supplied photos instead of independent reporting. The New Humanitarian

These findings represent a serious indictment of the state of press freedom in Bangladesh on the eve of what was supposed to be the country's most democratic election in a decade. The fear that pervades the journalism community is not abstract: it is grounded in the concrete experience of seven murdered journalists since July 2024, of offices burned by mobs, of financial investigations targeting dozens of journalists, and of anti-terrorism prosecutions used against prominent media figures.

The science journalist in this environment faces specific challenges. Election-related science journalism, covering topics including the health consequences of campaign events, the environmental implications of different parties' platform commitments, and the data infrastructure for election monitoring, requires a level of political engagement that increases the personal risk to the journalist. Reporting on scientific evidence that contradicts a powerful political actor's claims requires a degree of institutional courage that is harder to sustain in an environment of pervasive fear.

25.2 Data Journalism and Election Coverage: The Promise and the Peril

Election coverage represents one of the areas where data journalism has most potential to add genuine value to science journalism in Bangladesh. Electoral data, including constituency-level results, demographic data on voter registration and turnout, and the financial records of campaign contributions, is inherently numerical and statistical, and the systematic analysis of this data can reveal patterns of electoral irregularity, voter suppression, and political financing that are impossible to document through conventional reporting.

The data journalism capacity that has developed in a small number of Bangladeshi newsrooms, including at The Daily Star and at Prothom Alo, has produced some election data journalism in recent cycles. But the obstacles to systematic election data journalism in Bangladesh are significant. The Election Commission's disclosure of electoral data is inconsistent and sometimes deliberately obfuscatory. The legal framework for campaign finance transparency is inadequate. And the political sensitivity of data journalism that might reveal electoral irregularities means that editors and publishers face strong pressures to avoid publication.

A large-scale data breach on January 31, 2026, within the Election Commission's mandatory online accreditation system leaked the private National ID details, home addresses, and signatures of an estimated 14,000 journalists, raising serious questions about the security of the Election Commission's digital infrastructure and about the implications for journalist safety in the pre-election period. International Federation of Journalists

This data breach is a science and technology journalism story of significant importance: it raises questions about the security architecture of government digital systems, the adequacy of data

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protection frameworks, and the institutional competence of the Election Commission in managing sensitive personal data. It also has direct personal implications for the journalists whose data was exposed, who face increased risks of targeted harassment or doxxing.

25.3 Post-Election Journalism and the Question of Institutional Reform

Whatever the outcome of the 2026 election, the questions about institutional reform of the Bangladeshi media environment that have been debated since August 2024 will continue to demand journalistic and civic attention. The Media Reform Commission's recommendations, the National Media Commission ordinance that was condemned by international press freedom organizations, and the ongoing debate about the legal framework for journalism in Bangladesh are all dimensions of a policy conversation that the journalism community needs to engage with systematically.

For science journalists specifically, the institutional reform agenda has several dimensions of direct relevance. The question of how scientific institutions, including the government's health, agriculture, and environment agencies, should be required to disclose data to the public and to journalists is a dimension of the broader transparency and access to information debate that media reform must address. The question of how the regulatory framework for pharmaceutical advertising, pesticide marketing, and agricultural input promotion should protect the public from commercially motivated scientific misinformation is a dimension of the consumer protection and public health policy agenda.

The reform of broadcast licensing, which was one of the most important mechanisms through which the Hasina government maintained political control over television journalism, has implications for science broadcasting. The development of genuinely independent public broadcasting, insulated from both government control and commercial pressure, is essential for the development of science programming that serves public interest rather than institutional or commercial interests.

Coda to Part Three: Science Journalism in a Contested World

The picture that emerges from Part Three is not a comfortable one. The international dimensions of science journalism in Bangladesh are characterized by profound inequalities of power, resources, and institutional capacity. The global scientific publishing system marginalizes Bangladeshi science. The international journalism funding system that provided some compensation for the weakness of the domestic media economy has been severely disrupted by the collapse of USAID and the retreat of European donors. The global platforms that dominate the Bangladeshi information ecosystem are ungoverned by Bangladeshi law and poorly adapted to the specific cultural, linguistic, and political context of Bangladeshi users. The international press freedom regime, while providing some accountability for the worst violations, is limited in its capacity to address the structural conditions that make press freedom difficult in Bangladesh.

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But Part Three has also identified resources, possibilities, and sources of genuine hope. The development of South-South journalism networks creates new models of international cooperation that are less dependent on the asymmetric relationships of the traditional development assistance model. The growth of open access science publishing, however imperfect, has made more scientific knowledge accessible to Bangladeshi journalists and audiences than was previously possible. The development of collaborative investigative journalism models enables stories to be told that no single national journalism community could tell alone. And the international legal framework for press freedom, while inadequately enforced, provides normative resources that can be used in domestic advocacy, in international pressure campaigns, and in the cultivation of a professional culture that values press freedom as something more than a formal constitutional guarantee.

The science journalist who understands these international dimensions is better equipped to practice her profession than one who treats journalism as a purely domestic enterprise. She can use international funding strategically, knowing its limitations as well as its benefits. She can engage with international press freedom organizations effectively, understanding what they can and cannot do. She can report on Bangladeshi science in international context, connecting domestic stories to the global systems that shape them. And she can participate in the international journalism community as a contributor rather than a recipient, bringing the specific knowledge and experience of journalism in Bangladesh to bear on global conversations about the future of the profession.

The world of science journalism in 2026 is more difficult than the world of a decade ago, in Bangladesh as in most places. The economic model of journalism is under severe stress. The political environment for press freedom is more hostile in more countries. The information ecosystem is more fragmented, more polluted with misinformation, and more dominated by algorithmic systems whose alignment with the public interest is dubious at best. These are real and serious difficulties, and Part Three has not tried to minimize them.

But the need for good science journalism has never been greater than it is in 2026. The convergence of climate crisis, public health emergency, technological disruption, and political instability that characterizes the current moment creates a desperate need for the kind of rigorous, courageous, community-grounded, and democratically committed science journalism that this textbook has tried to articulate. Meeting that need in Bangladesh, under the conditions that actually exist rather than the conditions that would be ideally preferred, is the challenge and the vocation of the Bangladeshi science journalist.

Part Four of this textbook will examine the educational institutions and professional training systems through which the next generation of Bangladeshi science journalists will be formed, analyzing both the current landscape of journalism education in Bangladesh and the reform agenda necessary to produce journalists capable of meeting the demands described in Parts One, Two, and Three.

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Chapter Notes and Further Reading for Part Three

On International Press Freedom:

The annual reports of the Committee to Protect Journalists (cpj.org) and Reporters Without Borders (rsf.org) provide the most comprehensive annual documentation of press freedom conditions in Bangladesh. The Oxford Human Rights Hub's analysis of weaponized legalism (ohrh.law.ox.ac.uk) provides the most analytically sophisticated framework for understanding the specific mechanisms through which press suppression operates in transitional democracies. The Clooney Foundation for Justice's 2025 report on the Digital Security Act, produced in collaboration with the Centre for Governance Studies, provides the most systematic empirical analysis of how that law was used against journalists. ARTICLE 19's submissions to the Bangladesh Media Reform Commission (article19.org) provide detailed legal analysis of the relevant legislative framework.

On International Funding and the USAID Crisis:

The Internews Europe report on the impact of USAID cuts on global journalism, produced in 2025, is the most comprehensive analysis of the funding collapse and its consequences. The Nature article "Science journalism on the ropes worldwide as US aid cuts bite" (February 2026) provides the specific analysis of consequences for science journalism. The Foreign Policy article "The Heyday of NGOs Ended Long Before the End of USAID" provides important critical context on the broader patterns of which the USAID collapse is one manifestation.

On Global Scientific Institutions:

Philip Altbach and Hans de Wit's work on academic inequality and the global university hierarchy provides important context for understanding the marginalizing effects of the international scientific publishing system on Global South research institutions. The CGIAR Independent Science and Partnership Council's periodic reviews of CGIAR's research agenda provide insider documentation of how research priorities are set in the international agricultural science system. Naomi Oreskes' work on the political economy of science, particularly "Why Trust Science?" (2019), provides essential frameworks for evaluating the credibility and limitations of international scientific institutions.

On Platform Governance:

The work of the Citizen Lab at the University of Toronto provides the most rigorous technical research on digital surveillance and platform governance failures in countries including Bangladesh. Safiya Umoja Noble's "Algorithms of Oppression" (2018) provides the essential framework for understanding how algorithmic systems embed and amplify social inequalities. The Global Network Initiative's principles and implementation guidelines provide the most developed framework for platform accountability in countries with threatened press freedom.

On the NWICO and Information Order:

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The MacBride Report itself, "Many Voices, One World" (1980), remains a foundational document for understanding the politics of global communication. Cees Hamelink's "Cultural Autonomy in Global Communications" (1983) provides the most sophisticated academic elaboration of the MacBride framework. More recently, the work of scholars including Terhi Rantanen, Daya Kishan Thussu, and Oliver Boyd-Barrett provides contemporary analyses of global communication inequality that update the NWICO framework for the digital era.

On International Human Rights Law and Press Freedom:

The Human Rights Committee's General Comment 34 on Article 19 of the ICCPR (2011) is the essential reference document for the international legal framework on freedom of expression. David Kaye's work as UN Special Rapporteur on freedom of expression, including his thematic reports on digital security legislation and the responsibilities of internet intermediaries, provides authoritative legal analysis directly relevant to Bangladesh. Frank La Rue's earlier work as Special Rapporteur on internet freedom established foundational principles subsequently developed by Kaye.

Part Three of Nine Parts ends here. Part Four will examine the educational and professional training systems that prepare science journalists in Bangladesh, analyzing the curriculum, pedagogy, institutional culture, and reform agenda of journalism education with specific attention to the development of scientific literacy, data skills, legal knowledge, and ethical reasoning.

PART THREE: THE INTERNATIONAL DIMENSIONS OF SCIENCE JOURNALISM IN BANGLADESH

Global Systems, Transnational Power, Cosmopolitan Knowledge, and the Struggle for Sovereign Journalistic Voice

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A Note on the Structure of Part Three

Part Two of this textbook examined science journalism through the lens of specific domains: health, environment, agriculture, and technology. Each domain, as we saw, is shaped not only by its internal scientific logic but by the institutional, political, economic, and legal structures within which that science is produced, communicated, and contested. Part Three extends and deepens this analysis by asking a question that was present throughout Part Two but never made the primary focus: in what sense is science journalism in Bangladesh a local practice, and in what sense is it a node within a global system of knowledge production, circulation, and contestation?

The answer, which Part Three will elaborate across eight chapters, is that it is deeply and inescapably both. The science that Bangladeshi journalists report on is largely produced within international scientific institutions operating under global norms. The funding that supports both scientific research and science journalism in Bangladesh flows substantially from international

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sources with their own agendas. The legal frameworks that constrain and enable science journalism in Bangladesh are shaped by international human rights law and by the treaty obligations that Bangladesh has assumed. The platforms through which most Bangladeshi science journalism is now distributed are owned and governed by corporations based in the United States. The professional norms and standards to which Bangladeshi science journalists aspire are largely developed in and for the conditions of wealthier democracies with very different media ecosystems. And the international advocacy networks that fight for press freedom in Bangladesh are powerful actors in shaping both the practice and the possibilities of science journalism within the country.

Part Three examines each of these dimensions with the same combination of philosophical depth, historical specificity, legal rigor, and political honesty that has characterized the textbook throughout. It asks not only what the international dimensions of Bangladeshi science journalism are, but what they mean: what values and interests they serve, what possibilities they open and what they foreclose, and what a genuinely sovereign, genuinely democratic, genuinely Bangladeshi science journalism would look like in relation to the global systems within which it operates.

Chapter Eighteen: The Global Architecture of Science Communication and Bangladesh's Position Within It

18.1 The Uneven Geography of Scientific Knowledge Production

There is a geography of science, and it is a deeply unequal one. The production of the peer-reviewed scientific literature that constitutes the primary reference point for science journalism globally is overwhelmingly concentrated in a small number of wealthy countries. The United States, the United Kingdom, Germany, China, and a handful of other high-income and upper-middle-income countries account for the vast majority of the papers published in the high-impact journals that set the global scientific agenda. Bangladesh, with its 170 million people and its extraordinary concentration of the most pressing scientific problems on earth, including the intersection of climate change, poverty, disease, and environmental degradation, contributes a small fraction of the global scientific literature.

This geographic imbalance is not merely a statistical curiosity. It has profound consequences for what counts as scientifically interesting and scientifically important, for whose problems get studied and whose are ignored, and for the frameworks of analysis within which global science journalism operates. The science journalist who relies primarily on international journals and international scientific institutions for her sources is, even without intending to, importing a perspective on what matters that may not correspond to the realities and priorities of the Bangladeshi public she is supposed to be serving.

The sociology of science, which we introduced in Part One through the work of Robert Merton and his successors, has documented in considerable detail how the institutions of science

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reproduce themselves across time and space. Merton's norms of science, universalism, communalism, disinterestedness, and organized skepticism, are supposed to create a system of knowledge production that is indifferent to the social location of the knowledge producer: a discovery made in Dhaka should be evaluated by the same standards as a discovery made in Cambridge or Berkeley. In practice, as decades of research in the sociology of scientific knowledge have shown, the institutions of science are deeply shaped by the social structures of the societies within which they operate. The peer review system, the funding mechanisms, the citation networks, the conference circuits, and the journal hierarchies that together constitute the infrastructure of international science all embody and reproduce the power asymmetries of the international system.

Pierre Bourdieu's analysis of scientific fields as arenas of symbolic and material capital accumulation is directly relevant here. In Bourdieu's framework, which he developed in works including "Homo Academicus" (1984) and "The Science of Science and Reflexivity" (2001), the scientific field is structured by struggles for recognition, credibility, and authority that operate according to their own specific logic but are also connected to the broader distribution of economic and political power. Scientists from peripheral countries like Bangladesh operate within this field with a fundamental disadvantage: their institutional affiliations, their access to funding, their ability to participate in the international conference circuits and editorial networks that determine what gets published and what gets recognized, are all constrained by the relative poverty and institutional underdevelopment of their home institutions.

The implications for science journalism are significant. The Bangladeshi science journalist who wants to report critically on, say, the international scientific literature on arsenic contamination, or on the modeling assumptions embedded in global climate change projections, or on the design of randomized controlled trials conducted in Bangladeshi communities by international research teams, is engaging with a body of knowledge that was not produced primarily by or for Bangladeshi scientists and that may embody assumptions and priorities that are not well aligned with Bangladeshi interests and realities. She needs to be able to assess not just the technical quality of the science but its social and political context, and this requires a form of critical scientific literacy that goes beyond what most journalism training provides.

The bibliometric dimension of this inequality deserves specific attention because it is relevant to a problem that Bangladeshi science journalists encounter regularly: the question of how to assess the credibility and authority of scientific claims made by researchers from different institutional contexts. In the international scientific communication system, the impact factor of the journal in which a study is published serves as a proxy for its quality and significance. High-impact journals like Nature, Science, The Lancet, and the New England Journal of Medicine are treated as the gold standard of scientific credibility, and studies published in them receive enormous amplification in science journalism globally. Studies published in lower-impact journals, or in journals that primarily serve non-Anglophone scientific communities, receive much less attention.

This hierarchy of scientific credibility is not simply a reflection of research quality. It is also a reflection of institutional access and financial resources. Publishing in high-impact journals

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requires, among other things, the ability to pay article processing charges that often exceed the annual research budget of an entire Bangladeshi university department, institutional affiliations that provide access to the informal networks through which papers are commissioned and reviewed, and the ability to conduct research at a scale and with methods that meet the editorial standards of journals designed primarily for the research conditions of wealthy countries. Research conducted by Bangladeshi scientists working within Bangladeshi institutions, on problems of direct relevance to Bangladeshi realities, is systematically disadvantaged in this system even when it is of high technical quality.

The science journalist who is aware of this systemic bias will approach the hierarchy of scientific credibility with appropriate critical distance. She will not automatically privilege a study published in a high-impact international journal over one published in a regional or national journal if the latter has more appropriate methodology for the Bangladeshi context and more direct relevance to the problem being reported. She will be sensitive to the ways in which the framing of research questions by international scientists may reflect assumptions about what is normal or important that do not apply in the Bangladeshi context. And she will actively seek out the work of Bangladeshi scientists, even when it is published in less prestigious outlets, as an essential counterweight to the dominant international perspective.

18.2 The International Science Communication System: UNESCO, ISCU, and the Architecture of Global Science Policy

The international institutions that govern and coordinate global science are important actors in shaping the conditions within which Bangladeshi science journalism operates. Understanding these institutions, their structures, their mandates, their internal politics, and their relationships with member states like Bangladesh is an essential component of the sophisticated science journalist's knowledge base.

The United Nations Educational, Scientific and Cultural Organization (UNESCO), whose mandate includes both the promotion of science and the protection of press freedom, occupies a unique position at the intersection of these two concerns. UNESCO's Recommendation on Science and Scientific Researchers (adopted in 1974 and revised in 2017) sets out international norms for the organization and conduct of scientific research, including principles of freedom of inquiry, international cooperation, and the right of scientists to publish their findings without political interference. UNESCO's work on science journalism, including the training programs it has supported for journalists in developing countries, the media literacy initiatives it has promoted, and the policy research it has conducted on the relationship between science communication and public understanding, has had some influence on science journalism practice in Bangladesh.

UNESCO's specific engagement with Bangladesh in the period since August 2024 has been notable for both its ambition and its limitations. The organization's convening of the World Press Freedom Day 2025 dialogue in Dhaka, discussed in the Prolegomena to this textbook, represented a genuine attempt to use international normative authority to support media reform in a transitional political moment. UNESCO's recommendations to the Bangladesh Media

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Reform Commission included specific provisions for the support of science journalism, including the development of specialized training programs and the establishment of institutional mechanisms for protecting journalists who cover sensitive scientific and environmental topics. But the gap between UNESCO's recommendations and their implementation has been, as with much international policy advice, substantial.

The International Science Council (ISCU), formed in 2018 through the merger of the International Council of Science (ICSU) and the International Social Science Council (ISSC), is the primary international body representing scientific organizations and national academies across the disciplines. The ISCU's membership includes the Bangladesh Academy of Sciences, and the council's work on open science, scientific integrity, and the responsible use of scientific evidence in public policy is directly relevant to the concerns of Bangladeshi science journalism. The council's 2021 report on "Opening the Record of Science: Making Scholarly Publishing Work for Science in the Digital Era" addressed the open access question that is one of the most important structural issues for science journalism in developing countries: the question of whether publicly funded scientific research should be freely available to journalists, policymakers, and citizens, or whether it should be locked behind the paywalls of commercial academic publishers.

The open access question deserves extended treatment because it is not merely a technical issue about publishing arrangements: it is a fundamental question about the political economy of scientific knowledge and about who has the right to access publicly funded research. Most of the scientific literature relevant to Bangladesh is published in journals owned by a small number of multinational publishing corporations, primarily Elsevier, Springer-Nature, Wiley-Blackwell, and Taylor and Francis. These corporations operate subscription and article-processing-charge models that generate enormous profits by charging universities and research institutions for access to research that was produced primarily with public funding and that was reviewed by unpaid academic volunteers. The combined profit margins of these corporations, which in some years have exceeded those of pharmaceutical companies, are extracted from the scientific communication system without contributing to the production of the research itself.

The implications for Bangladeshi science journalism are direct and practical. A Bangladeshi journalist who wants to read the full text of a study published in an Elsevier journal about arsenic contamination in groundwater, or in a Springer journal about climate change projections for the Bay of Bengal, will typically find that access requires payment of fees that are prohibitively expensive for individual journalists or for small news organizations operating in a low-income country context. The open access movement, which has achieved important victories including the mandate by many funding agencies that research they fund be published in open access format, has not yet overcome the fundamental structural incentives that make commercial publishing enormously profitable and therefore enormously resistant to reform.

In 2024, the Bangladesh government formally announced its intention to develop a national open access policy for publicly funded research, in alignment with the UNESCO Recommendation on Open Science adopted in 2021. The policy, which had not been fully implemented as of early 2026, would require researchers at public universities and research institutes in Bangladesh to

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deposit their publications in publicly accessible repositories. If fully implemented, this policy would significantly expand the material available to Bangladeshi science journalists without payment, and would represent an important step toward addressing the access inequality that currently disadvantages domestic science journalism.

18.3 The Global Scientific Agenda and Its Silences: What International Science Does Not Study

One of the most important and least visible aspects of the relationship between international science and Bangladeshi science journalism is the question of what international science does not study, and why. The global scientific agenda, shaped as it is by the funding priorities of the governments and foundations of wealthy countries and by the interests of multinational pharmaceutical, agricultural, and technology corporations, has systematic gaps that correspond to the problems and needs of poor countries and marginalized populations.

The concept of "neglected diseases" in global health illustrates this pattern with particular clarity. The World Health Organization designates a category of "neglected tropical diseases" that includes conditions like leishmaniasis, filariasis, and schistosomiasis, which disproportionately affect poor populations in tropical countries but receive a fraction of the research investment devoted to conditions that affect wealthy-country populations. In Bangladesh, the specific burden of diseases including kala-azar (visceral leishmaniasis), which is endemic in several districts of the country, has been shaped partly by the relative lack of international pharmaceutical interest in developing treatments and diagnostics for conditions that primarily affect people without purchasing power.

The science journalist who understands this phenomenon can report on neglected diseases not just as a public health problem but as a political economy problem: a problem about whose suffering generates sufficient market demand to attract pharmaceutical research investment, and whose does not. This is a significantly more powerful and more informative story than a simple account of disease burden statistics, because it identifies the structural causes of the research gap and points toward the policy interventions that might address it.

Similarly, the agricultural science relevant to small-scale farming in Bangladesh has been systematically underfunded relative to the agricultural science relevant to large-scale, mechanized, input-intensive farming in wealthy countries. The specific crop varieties, farming practices, and pest management approaches that would be most beneficial for Bangladeshi smallholder farmers under conditions of climate change and resource scarcity are not the varieties, practices, and approaches that attract the most research investment from multinational seed and chemical companies. The publicly funded international agricultural research centers of the CGIAR system, including the International Rice Research Institute and the International Maize and Wheat Improvement Center, have historically done more to address this gap than private sector research, but they too are shaped by donor priorities that do not always align with the needs of the poorest farming communities.

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The atmospheric and climate science relevant to Bangladesh's specific situation as a river delta subject to extreme weather events, sea-level rise, and monsoon variability has received somewhat more international attention, partly because Bangladesh's extreme climate vulnerability makes it a compelling subject for research that advances understanding of climate impacts more broadly. But even in this domain, the specific concerns of Bangladeshi communities, including the impacts of salinity intrusion on agricultural productivity, the relationship between upstream river management and downstream flooding risk, and the long-term viability of coastal livelihoods under various climate scenarios, have not always been the primary focus of international research.

The science journalist who is aware of these systematic gaps in the international scientific agenda is better positioned to advocate for research that addresses Bangladeshi needs, to recognize when coverage of international science misses dimensions that are important in the local context, and to identify the local and regional scientists who are working on problems that the global scientific community is neglecting.

18.4 Open Science, Knowledge Commons, and the Democratization of Scientific Information

The open science movement, which has gained enormous momentum since the mid-2010s and which was significantly accelerated by the COVID-19 pandemic, represents one of the most important international developments for science journalism in developing countries. Open science encompasses a cluster of related commitments: open access publication of research results, open data sharing, open source research software, preprint culture that makes research available before peer review, citizen science that involves non-specialists in data collection and analysis, and the open and transparent communication of research methods and materials.

For Bangladeshi science journalism, the most immediately significant dimension of open science is open access publication and preprint culture. The rapid expansion of preprint servers, particularly medRxiv and bioRxiv for health and biological sciences research, means that an increasing amount of important research is available without charge before formal peer review and publication. During the COVID-19 pandemic, many of the most important studies on transmission, immunity, vaccine efficacy, and treatment were first released as preprints on these servers, days or weeks before they appeared in peer-reviewed journals.

The preprint culture creates both opportunities and challenges for science journalists. The opportunity is access: a journalist in Dhaka can now read the same research papers as a journalist in London, without paywalls, and often within days of their completion rather than months or years after their initial submission to journals. The challenge is interpretation: preprints have not yet been peer reviewed, and they may contain errors, methodological weaknesses, or overclaims that the peer review process would identify and correct. The science journalist who reports on a preprint without making clear its preliminary and unreviewed status is potentially misleading her readers, and the speed with which social media amplifies preprint findings can outpace the peer review process by which errors are identified and corrected.

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The COVID-19 pandemic illustrated both sides of this challenge in Bangladesh specifically. Bangladeshi health journalists who monitored the preprint servers were able to report on important developments in understanding of the virus, vaccine immunogenicity, and treatment options significantly earlier than journalists who waited for peer-reviewed publication. But the same preprint culture that gave them this advantage also produced a significant number of high-profile papers that were later retracted or substantially corrected, including several studies that generated enormous media coverage before their methodological problems were identified. The hydroxychloroquine controversy, in which a preprint claiming that the drug was effective against COVID-19 generated massive media coverage before being thoroughly discredited, is the most dramatic example of this phenomenon.

The development of science journalism education and professional norms appropriate to the preprint era is an urgent priority for Bangladesh and for science journalism globally. The traditional principle that science journalists should only report on peer-reviewed findings is clearly obsolete in a world where preprints often contain the most current and most important information. But the replacement principle, that science journalists should report on preprints with appropriate caveats about their preliminary status, requires both scientific literacy sufficient to evaluate the quality of pre-review research and communicative skill sufficient to convey uncertainty without undermining the story's newsworthiness.

The citizen science movement, which involves volunteers from the general public in data collection, species identification, environmental monitoring, and other research tasks that require large numbers of observers distributed across space, has specific and underexplored potential for science journalism in Bangladesh. Bangladesh has a large population of educated urban youth with smartphones and internet access, and platforms like iNaturalist, eBird, and citizen science programs associated with climate and environmental monitoring have had some success in engaging these populations in scientific data collection. The science journalist who understands citizen science can both report on the scientific value of citizen-generated data and explore the epistemological and political implications of distributed, democratic participation in knowledge production.

Chapter Nineteen: International Scientific Institutions and Their Relationship with Bangladeshi Science Journalism

19.1 The World Health Organization and Health Journalism in Bangladesh

No international institution has a more direct and more consequential relationship with health journalism in Bangladesh than the World Health Organization. The WHO's disease surveillance systems, health statistics databases, clinical guidelines, and vaccine recommendations are the primary authoritative sources for much of the health information that Bangladeshi health journalists rely on. The organization's country office in Dhaka, its regional office for South-East Asia in New Delhi, and its Geneva headquarters all play roles in shaping the information environment within which Bangladeshi health journalism operates.

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The relationship between the WHO and health journalism in Bangladesh is, however, far more complex and more contested than the organization's formal role as the authoritative source of global health information might suggest. The WHO is a political institution as much as a scientific one: its decisions about what information to release, when to release it, and how to frame it are shaped by the interests of its member states, by the political dynamics of its governance structures, and by the complex relationships between the organization and the pharmaceutical companies, national governments, and donor agencies that shape global health policy.

The COVID-19 pandemic revealed both the indispensability and the limitations of the WHO as a source of reliable health information. The organization's initial response to the pandemic was shaped by its institutional dependence on the cooperation of member states, including China, which complicated the timeliness and completeness of the initial outbreak data that the WHO released. The WHO's early guidance on the airborne transmission of SARS-CoV-2 was more conservative than the evidence warranted, partly reflecting the political sensitivities associated with challenging the initial consensus that the virus spread primarily through droplets and contact surfaces. And the organization's role in the controversy over the origins of the virus was hampered by the geopolitical context of its relationship with China.

For Bangladeshi health journalists, the lessons of COVID-19 for the relationship with WHO are nuanced. The WHO's systematic health data, including the Global Health Observatory and the disease burden estimates produced by the Global Burden of Disease study (which, though associated with the Institute for Health Metrics and Evaluation rather than WHO, is closely aligned with the WHO's statistical framework), remain indispensable resources for contextualizing Bangladeshi health statistics. But the health journalist who treats WHO guidelines and statements as the uncontestable endpoint of scientific inquiry, rather than as important inputs into a more complex evidential and political analysis, is ceding a critical function that journalism must maintain.

The WHO's relationship with Bangladesh has been specifically shaped by the country's extraordinary experience with several of the organization's major global health initiatives. The global immunization programs coordinated through the WHO and UNICEF have been among the most successful in history in Bangladesh: the country has achieved vaccination coverage rates for many standard childhood vaccines that compare favorably with middle-income countries globally. The WHO's Essential Medicines program, which maintains a list of medicines considered most effective and safe to meet the most important health needs of a population, has been an important reference point for debates about pharmaceutical access and affordability in Bangladesh. And the WHO's work on antimicrobial resistance, which is a particularly serious problem in Bangladesh given the country's high rates of antibiotic use and the sophistication of local pharmaceutical manufacturing capacity, has generated important research that Bangladeshi health journalists can use to contextualize their coverage of antibiotic stewardship.

The specific tension between WHO recommendations and local policy in Bangladesh that has received the most attention from health journalists concerns vaccine policy. Bangladesh

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participates in the WHO's Expanded Programme on Immunization, which provides the framework for the national immunization schedule. But decisions about vaccine introduction, including decisions about whether to introduce newer and more expensive vaccines like rotavirus, pneumococcal, and HPV vaccines, are made in the context of competing claims on the limited health budget, debates about cost-effectiveness in the specific Bangladeshi context, and the political economy of vaccine procurement, in which the interests of international vaccine manufacturers are represented through complex channels including the GAVI Alliance, UNICEF's supply division, and bilateral donor programs.

The health journalist who understands this political economy is better positioned to cover vaccine policy debates in ways that go beyond the simple framing of "experts recommend, government decides." She can ask who benefits from specific vaccine introductions, what the alternatives to vaccine-based strategies might be for the same disease burden, what the history of similar decisions in comparable countries suggests about the long-term consequences, and whether the information that policymakers are using to make their decisions accurately reflects the Bangladeshi evidence base or primarily reflects recommendations developed in and for different contexts.

19.2 The IPCC, Climate Science, and the Reporting of Scientific Consensus

The Intergovernmental Panel on Climate Change occupies a unique and philosophically interesting position in the global science communication landscape. The IPCC does not conduct original research: it is an assessment body that periodically reviews and synthesizes the existing scientific literature on climate change, producing reports that represent the consensus of thousands of scientists reviewing tens of thousands of studies. These reports, and particularly the Summary for Policymakers documents that are designed to communicate the IPCC's findings to non-specialists, are among the most important documents in the world for science journalism.

The IPCC's influence on Bangladeshi climate journalism is substantial. The organization's successive Assessment Reports, from the First Assessment Report in 1990 through the Sixth Assessment Report completed in 2022, have provided the primary reference framework for reporting on climate change globally and in Bangladesh. The IPCC's projections of sea-level rise, temperature increase, precipitation changes, and extreme weather event intensification are the standard benchmarks against which Bangladeshi climate journalists measure the country's vulnerability and the urgency of adaptation and mitigation action.

But the relationship between IPCC reports and science journalism is philosophically more complex than the simple model of "scientists produce consensus, journalists communicate it" would suggest. The IPCC process, which requires that every statement in the Summary for Policymakers be approved by the representatives of all member governments, including governments with strong interests in minimizing the urgency of climate action, systematically produces documents that understate the risks identified in the underlying scientific literature. Multiple analyses have documented that successive IPCC reports have systematically underestimated the pace and severity of observed climate changes compared to the predictions of

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the underlying models, a pattern that reflects both genuine scientific conservatism and the political pressures of the intergovernmental approval process.

The climate journalist who understands this pattern is better positioned to report on IPCC findings accurately: not by dismissing the reports as politically compromised, but by understanding that they represent a scientifically credible lower bound on climate risk rather than the full range of scientific opinion. The most important climate science for Bangladesh, including projections of potential sea-level rise under high-end emission scenarios, projections of changes in monsoon intensity and variability, and assessments of the potential for nonlinear climate responses including the collapse of major ice sheets and the disruption of the Atlantic Meridional Overturning Circulation, sometimes appears more prominently in the scientific literature than in the politically negotiated IPCC summaries.

The sixth cycle of IPCC reports, which concluded in 2022 with the Synthesis Report, was specifically notable for its stronger language on the urgency of climate action and on the inadequacy of current commitments. The IPCC Working Group II report on impacts, adaptation, and vulnerability identified Bangladesh, along with several other delta nations and small island states, as being among the countries facing the most severe climate impacts in the near term, under any realistic emission scenario. Bangladeshi climate journalists who covered this report had an opportunity to connect the IPCC's findings with the specific experiences and projections for Bangladesh in a way that would be both scientifically rigorous and locally resonant.

The controversy over loss and damage, which became a central issue at COP27 in 2022 and COP28 in 2023, illustrates the political dimensions of the IPCC process that climate journalists in Bangladesh need to understand. The concept of loss and damage refers to the harm that climate change causes to vulnerable countries that is beyond what they can adapt to, and the associated question of whether wealthy countries that have contributed most to cumulative greenhouse gas emissions have an obligation to compensate vulnerable countries for these harms. Bangladesh was one of the first countries to call for a specific loss and damage mechanism in international climate negotiations, and its position on this issue has been shaped by both the scientific evidence about its vulnerability and the political judgment about what is negotiable in the international climate system. The climate journalist who understands both the scientific evidence on loss and damage and the political economy of international climate negotiations is better positioned to cover this story in its full complexity.

19.3 The Pharmaceutical Industry's Global Scientific Infrastructure and Its Implications for Bangladeshi Health Journalism

The global pharmaceutical industry's relationship with scientific knowledge production is one of the most important and most contentious subjects in health journalism globally, and it takes specific forms in the Bangladeshi context that deserve careful examination. Bangladesh is both a consumer of pharmaceutical products produced by international corporations and a producer of generic pharmaceutical products through a domestic pharmaceutical sector that is, by the standards of developing countries, relatively sophisticated.

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The international pharmaceutical industry's influence on the scientific literature, which has been extensively documented in the work of scholars including Ben Goldacre, Marcia Angell, Peter Gøtzsche, and Richard Smith, operates through multiple channels: direct funding of clinical trials, the publication of favorable trial results and the suppression of unfavorable ones (what Goldacre has called "publication bias"), the ghostwriting of journal articles, the funding of medical education programs and continuing medical education, and the cultivation of key opinion leaders among academic physicians who can promote the industry's products through their research and clinical activity.

For Bangladeshi health journalism, these global dynamics have specific local manifestations. The multinational pharmaceutical companies operating in Bangladesh fund a range of activities that can influence the scientific and medical information environment, including medical conferences, clinical training programs, and promotional activities that provide physicians with gifts, hospitality, and educational materials. The domestic pharmaceutical industry, while operating under different incentive structures from multinationals (since it primarily manufactures generic rather than proprietary medicines), has its own interests in shaping the regulatory and prescribing environment.

The Bangladesh Pharmaceutical Society and the Bangladesh Medical Association are the primary professional bodies through which the pharmaceutical industry engages with the medical profession, and the relationships between these bodies and both domestic and multinational pharmaceutical companies are the subject of ongoing concern among health advocacy groups. The Directorate General of Drug Administration (DGDA), which regulates pharmaceutical products in Bangladesh, has a complex relationship with the industry it regulates, shaped partly by the limited technical and financial capacity of the regulatory institution and partly by the political connections of major domestic pharmaceutical manufacturers.

The health journalist who covers pharmaceutical issues in Bangladesh needs to understand this institutional landscape in detail. She needs to know the regulatory history of specific drugs, the conditions under which they were approved, the clinical evidence that supports or challenges their use, and the financial relationships between the companies that produce them and the physicians, regulators, and professional associations that shape their use. She also needs to understand the specific Bangladeshi dimensions of global pharmaceutical controversies, including the use of medicines that are restricted or banned in other countries but continue to be prescribed in Bangladesh, the quality control problems in pharmaceutical manufacturing that have produced periodic scandals about adulterated or substandard medicines, and the equity implications of drug pricing policies that make life-saving medicines unaffordable for poor patients.

The 2024 dispute between DGDA and several domestic pharmaceutical manufacturers over the quality standards applied to antibiotic formulations illustrates these dynamics with particular clarity. Internal reports by DGDA inspectors, which became the basis of investigative reporting by several Bangladeshi health journalists, documented that a significant proportion of antibiotic formulations tested in government laboratories failed to meet the bioequivalence standards that are required to ensure that generic medicines perform equivalently to the branded originals they

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are intended to replace. The companies involved disputed the testing methods, arguing that the government's testing protocols were outdated and inconsistent with international standards. The regulatory agency was in the uncomfortable position of having to defend its technical authority against companies with the legal and financial resources to challenge it in court and the political connections to delay enforcement action.

For the health journalist covering this story, the scientific questions, whether the testing methods were adequate, what the clinical significance of bioequivalence failures is, and how the Bangladeshi evidence compared with international data on generic medicine quality, were inseparable from the institutional and political questions, why DGDA's enforcement capacity was so limited, who had the power to delay regulatory action, and what the consequences of continued distribution of substandard antibiotics were for the already serious problem of antimicrobial resistance in Bangladesh.

19.4 The CGIAR System, Agricultural Research, and the Politics of International Knowledge Transfer

The Consultative Group on International Agricultural Research (CGIAR) system is one of the most important international actors in shaping the scientific knowledge base for Bangladeshi agriculture, and its relationship with Bangladeshi agricultural journalism illustrates several key themes about the politics of international knowledge transfer. The CGIAR centers, including the International Rice Research Institute (IRRI), the International Food Policy Research Institute (IFPRI), the WorldFish Center, and others, conduct research on the crops, farming systems, and food systems that are most important to the poorest countries, including Bangladesh.

The CGIAR has had genuine positive impacts on Bangladeshi agriculture, particularly through the development and dissemination of improved rice varieties and through research on flood-resistant and salinity-tolerant crops that have helped farmers adapt to the changing climate. BRRI dhan varieties, developed through collaboration between the Bangladesh Rice Research Institute and IRRI, have been among the most important contributors to the dramatic increase in rice production that has transformed Bangladesh's food security situation over the past fifty years.

But the CGIAR system also has a governance problem that is directly relevant to science journalism. The system's funding comes primarily from a group of wealthy-country donor governments and foundations whose priorities shape the research agenda. Over the past decade, the growing influence of the Bill and Melinda Gates Foundation, which has become one of the CGIAR's largest funders, has been associated with an increased emphasis on high-technology approaches to agricultural improvement, including biotechnology and precision agriculture, at the expense of more systemic approaches focused on agroecological farming and smallholder empowerment. The Gates Foundation's funding priorities, which are determined by its board without democratic accountability to the farming communities whose livelihoods are at stake, have a structural influence on what CGIAR researchers study and how they frame their findings.

The agricultural journalist who understands this funding dynamic is better positioned to cover CGIAR-related stories with appropriate critical distance. When an IRRI researcher presents new

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findings suggesting that a particular biotechnology application will increase yields or nutritional quality, the journalist should ask not only about the strength of the evidence but about the funding context, the alternative approaches that might have been pursued with the same resources, and whether the farming communities most affected by the proposed technology were involved in defining the research question.

The controversy over the CGIAR's "One CGIAR" reform process, which consolidated the previously independent system of research centers into a more unified governance structure between 2020 and 2023, illustrated the tensions within the system between scientific autonomy and donor accountability. Several agricultural scientists publicly argued that the consolidation was compromising the research independence of individual centers by subordinating their scientific agendas to centralized strategic priorities set by donors. This internal controversy within the global agricultural research system was largely invisible in Bangladeshi media, even though it had direct implications for the research on Bangladeshi agriculture that CGIAR centers would be conducting in future years.

Chapter Twenty: Transnational Advocacy Networks, International NGOs, and the Politics of Science Funding in Bangladesh

20.1 The NGO Complex and Its Science Journalism Implications

Bangladesh has one of the largest and most sophisticated non-governmental organization sectors of any developing country. Estimates of the number of registered NGOs in Bangladesh range from 50,000 to over 250,000, depending on the definition and the registration database consulted. The leading Bangladeshi NGOs, including BRAC, Grameen Bank, BDRCS, Proshika, and many others, operate at an enormous scale, providing social services, conducting development programs, and in some cases running research and advocacy activities that rival or exceed the capacity of government institutions.

The NGO sector's relationship with science journalism in Bangladesh is complex and multi-dimensional. On one hand, NGOs are among the most important producers of research and data on the social and environmental conditions that science journalism covers. BRAC's research on health, education, and poverty; the International Centre for Diarrhoeal Disease Research, Bangladesh's (icddr,b) work on infectious disease epidemiology; the Centre for Policy Dialogue's economic analysis; and the work of environmental NGOs including BCAS and Wateraid all provide essential evidence that is regularly used by science journalists. NGOs are also, in many cases, more willing to share data with journalists and more capable of communicating in terms accessible to non-specialist audiences than are government institutions.

On the other hand, NGOs have their own institutional interests, funding relationships, and advocacy agendas that can shape the way they produce and communicate research. An NGO that receives funding from an international donor with a specific policy interest in, say, the promotion of a particular microfinance model or a specific agricultural technology will have institutional

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incentives to produce and emphasize research that supports that interest. An NGO that runs a particular health or development program has an obvious interest in presenting evidence of that program's effectiveness in the most favorable light possible.

The science journalist who relies heavily on NGO-produced research without attending to these institutional interests is vulnerable to being used as a conduit for advocacy that is presented in the language of science. This is not to say that NGO research is systematically biased or unreliable: some of the best and most rigorous research on Bangladeshi social and environmental conditions is produced by NGOs, and the best NGO researchers operate with scientific integrity that rivals or exceeds that of academic institutions. But the journalist's critical function requires her to evaluate NGO research with the same skeptical attention to funding context, methodological quality, and potential conflicts of interest that she would apply to research from any other source.

20.2 The Transnational Advocacy Network and Its Information Politics

Scholars of international relations and global governance, particularly Margaret Keck and Kathryn Sikkink in their foundational work "Activists Beyond Borders" (1998), have analyzed the role of transnational advocacy networks in shaping state behavior and international norms. The concept of the transnational advocacy network describes the informal coalitions of non-governmental organizations, research institutions, media outlets, and individual activists that work across national boundaries to promote specific policy changes and normative shifts.

For Bangladeshi science journalism, the most important transnational advocacy networks are those concerned with climate change, labor rights in global supply chains, pharmaceutical access, and press freedom. Each of these networks involves complex relationships between international and domestic Bangladeshi actors, and each has specific implications for the practice of science journalism.

The transnational climate advocacy network that has mobilized around Bangladesh's climate vulnerability is one of the most sophisticated of its kind. Organizations including 350.org, Climate Action Network International, and the Loss and Damage Collaboration work with Bangladeshi civil society organizations, scientists, and journalists to amplify Bangladesh's voice in international climate negotiations and to document the human consequences of climate change in ways that generate international attention. The framing of Bangladesh as a "climate frontline state," a country that faces existential threats from climate change despite contributing minimally to the problem, has been an enormously effective advocacy frame that has mobilized both international sympathy and international funding for climate adaptation and loss and damage compensation.

For science journalists, the transnational climate advocacy network creates both resources and responsibilities. The network provides access to scientific expertise, communication support, and international publication platforms that can amplify the reach and impact of Bangladeshi climate journalism. But the network also has advocacy goals that may shape the framing of scientific findings in ways that emphasize certain aspects of the evidence while downplaying others. The

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science journalist who is embedded in or closely allied with the advocacy network needs to maintain the critical distance that her professional role requires, even as she draws on the network's resources.

The transnational labor rights network that monitors the garment industry in Bangladesh provides another important case study in the politics of advocacy science. Organizations including the Clean Clothes Campaign, Workers Rights Consortium, and the International Labour Organization monitor working conditions in Bangladeshi factories and produce research reports on occupational health, safety, and labor rights that are widely used by both international media and Bangladeshi journalists covering the garment sector. This research performs an important accountability function: it documents conditions that factory owners and government regulators have strong incentives to conceal, and it creates accountability pressure through the threat of international attention and potential consumer boycotts of brands that source from non-compliant factories.

But the transnational labor rights monitoring system also has limitations that the science journalist should understand. The monitoring and auditing systems on which much labor rights research is based have been shown, repeatedly, to miss or underreport serious violations in part because they rely on announced inspections, self-reported data, and formal documentation rather than undercover investigation or community-based surveillance. The Rana Plaza disaster occurred in factories that had passed multiple audits without the structural problems being identified. The science journalist who uses labor rights monitoring data without understanding these limitations is working with evidence that may systematically understate the severity of the conditions it is supposed to document.

20.3 International Press Freedom Organizations and Their Role in Shaping Bangladeshi Journalism

The international press freedom organizations, including Reporters Without Borders (RSF), the Committee to Protect Journalists (CPJ), Freedom House, Article 19, and the International Federation of Journalists (IFJ), play an important role in the Bangladeshi media environment that is distinct from but closely related to their role in science journalism specifically. These organizations document attacks on journalists, advocate for press freedom reform, provide legal and practical support to journalists under threat, and publish assessments of press freedom conditions in countries around the world that influence international perceptions and diplomatic engagement.

Their relationship with science journalism in Bangladesh is indirect but significant. The press freedom assessments they publish directly affect the international perception of the safety and viability of science journalism in Bangladesh, which in turn affects the willingness of international funders, training organizations, and media development partners to invest in Bangladeshi science journalism capacity. The legal support they provide to journalists prosecuted under the Digital Security Act and its successor legislation helps maintain a pool of experienced science journalists who would otherwise be forced out of the profession by the financial and professional consequences of legal harassment. And the international advocacy

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they conduct on behalf of press freedom reform directly engages the legislative and regulatory environment within which science journalism operates.

The specific interventions of international press freedom organizations in Bangladesh in the 2024-2026 period have been extensive and consequential. The IFJ's documentation, cited in the Prolegomena to this textbook, that 640 journalists faced formal legal procedures in the first eight months of the Yunus interim government period provided important context for understanding the scale of the challenge facing the profession. The CPJ's joint letter of October 2025 urging the interim government to strengthen press freedom protections ahead of the 2026 elections, cosigned by five civil society organizations, represented a coordinated international advocacy effort that used the leverage of international diplomatic relationships to push for domestic reform.

But the role of international press freedom organizations in Bangladesh is not without its own complications and controversies. These organizations operate from a universalist framework of press freedom norms that is grounded primarily in the legal traditions and political cultures of Western liberal democracies, and this framework does not always map cleanly onto the specific institutional, cultural, and political context of Bangladesh. The tension between universal press freedom principles and contextually specific understandings of how those principles should be applied is a genuine and recurring source of friction between international press freedom organizations and domestic Bangladeshi media actors, including some journalists and editors who argue that international pressure is sometimes deployed in ways that serve the interests of specific political factions rather than journalism as a whole.

The specific controversy surrounding the Media Reform Commission's recommendations and the government's January 2026 National Media Commission ordinance illustrates this tension. International press freedom organizations, including the IFJ and Article 19, condemned the government's proposed National Media Commission as a violation of Article 19 of the International Covenant on Civil and Political Rights, arguing that the proposed commission would give the government powers to regulate media content and ownership that are incompatible with international standards. Bangladeshi media professionals were divided: some shared the international organizations' concerns, while others argued that some form of regulatory framework was necessary to address the severe problems of politically connected media ownership that had developed under the Hasina government and that the international organizations' opposition to any form of media regulation served the interests of the existing media oligarchs who benefited from deregulation.

This controversy is important for science journalism specifically because the quality of the regulatory framework for media ownership and editorial independence directly affects the conditions under which science journalism can be practiced. A media environment dominated by politically connected conglomerates whose primary purpose is not journalism but influence is a media environment in which science journalism that challenges powerful interests, whether political, corporate, or scientific, faces enormous institutional pressures. The international press freedom organizations are right to argue that the government should not have the power to determine what media organizations can publish. They may be insufficiently attentive to the

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argument that some forms of regulation, particularly regulation of media ownership concentration and of the political connections of media owners, are necessary conditions for the editorial independence that press freedom requires.

20.4 The Politics of International Journalism Training: Who Trains Bangladeshi Journalists, and For What Purpose?

The international journalism training programs available to Bangladeshi journalists constitute an important dimension of the global system within which Bangladeshi science journalism is embedded. These programs, funded by international donors and operated by organizations including the International Center for Journalists (ICFJ), the Reuters Institute for the Study of Journalism, the European Journalism Centre, the BBC Media Action, and various bilateral development agencies, shape the professional norms, technical skills, and institutional relationships of the journalists who participate in them.

The training programs vary significantly in their quality, approach, and underlying assumptions about what journalism should be and do. Some programs, particularly those associated with established journalism schools like Columbia, Northwestern, and City, University of London, offer genuinely sophisticated training in investigative methods, data journalism, and science reporting that can significantly enhance participants' professional capacity. Others are primarily oriented toward the promotion of specific content areas (democracy reporting, development journalism, climate journalism) in ways that may serve the interests of the funders as much as the professional development of the trainees.

The most important bias in international journalism training programs for Bangladeshi journalists is the one that is most deeply embedded and therefore least visible: the assumption that the professional models and norms of journalism in wealthy democracies provide the appropriate standard against which Bangladeshi journalism should be measured and toward which it should aspire. This assumption is not entirely wrong: the commitments to accuracy, independence, transparency, and accountability that are central to good journalism in any context are genuinely universal values that transcend the specific institutional conditions of wealthy-country journalism. But the specific practices, institutional structures, and professional cultures through which these values are expressed in Bangladeshi journalism cannot and should not simply replicate those of American or British journalism, because the institutional, political, economic, and cultural contexts are profoundly different.

The science journalism training programs available to Bangladeshi journalists have been particularly influenced by the templates developed in the United States and the United Kingdom, where science journalism has a longer history, a more developed institutional infrastructure, and a professional culture that has been shaped by the specific relationships between science, government, and media in those societies. Programs that teach Bangladeshi science journalists to apply the framing devices, sourcing conventions, and narrative structures of science journalism as practiced at the New York Times or the Guardian are providing genuinely valuable technical training, but they may simultaneously be instilling professional assumptions that do not fit the Bangladeshi context, including assumptions about the adversarial relationship between

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journalists and official sources, the appropriateness of single-sourcing specific claims to named scientific experts, and the role of personal anecdote in anchoring complex scientific narratives.

The development of a training curriculum for science journalism that is genuinely adapted to the Bangladeshi context, drawing on international best practices while developing the specific skills and frameworks needed for effective science journalism in Bangladesh, is one of the most important tasks facing Bangladeshi journalism education institutions. Part Four of this textbook, which examines educational institutions and professional training, will return to this question in detail.

Chapter Twenty-One: The Political Economy of International Media Systems and Bangladesh

21.1 Global Media Ownership and Its Implications for Bangladeshi Science Journalism

The global media landscape within which Bangladeshi science journalism operates has undergone a profound transformation since the advent of digital platforms, and the political economy of this transformation has specific implications that deserve extended analysis. The story of global media concentration is well-known in outline: a small number of American technology corporations, primarily Meta (Facebook), Alphabet (Google and YouTube), and ByteDance (TikTok), now control the primary channels through which most people in Bangladesh, and indeed most people in the world, access news and information.

This concentration of platform power in the hands of a few corporations has transformed the economics of journalism globally, including in Bangladesh. The advertising revenue that previously supported journalism, both print and broadcast, has migrated overwhelmingly to the digital platforms, which offer advertisers more precise targeting, more reliable audience measurement, and lower costs than traditional media. The result is a structural crisis of journalism economics that has devastated newsroom capacity in country after country, including Bangladesh.

For science journalism specifically, the platform economics have created perverse incentives that are worth examining carefully. The algorithmic systems through which Facebook and YouTube determine which content reaches which audiences reward content that generates high engagement, meaning content that triggers emotional reactions including outrage, fear, and surprise. Science journalism, at its best, is characterized by precision, nuance, and appropriate uncertainty, qualities that are systematically disfavored by engagement-maximizing algorithms. The simple, surprising, emotionally resonant claim ("scientists discover miracle cure") generates far more algorithmic distribution than the accurate but complex story ("new study suggests modest benefit for specific subgroup, with important caveats about methodology and generalizability").

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The result is a systematic pressure on science journalists and their editors to sensationalize, simplify, and amplify the most surprising and emotionally resonant aspects of scientific findings at the expense of accuracy and appropriate uncertainty. This pressure operates through the economic incentives of digital publishing, in which content that generates clicks and shares produces more advertising revenue than content that is accurate but modest in its claims. A science journalist who consistently writes technically accurate but algorithmically unrewarding stories is a liability to a commercially pressed news organization, and the journalists who survive in commercially oriented newsrooms are those who have learned, consciously or unconsciously, to write for the algorithm.

The implications of this dynamic for health misinformation in Bangladesh are particularly serious. The algorithmic amplification of emotionally resonant health content means that false or misleading health information, which often has the characteristics, simplicity, emotional salience, and actionability, that algorithms reward, spreads more rapidly and more widely than accurate but nuanced health journalism. The COVID-19 infodemic in Bangladesh, discussed in Chapter Seventeen, was not simply a product of individual bad actors deliberately spreading false information: it was also a product of a platform architecture that systematically rewarded the spread of simple, emotionally resonant claims regardless of their accuracy.

21.2 The International Flow of Science News: Wire Services, Syndication, and the Bangladesh Media

The major international wire services, particularly Reuters, the Associated Press, and Agence France-Presse, play an important role in shaping the international dimension of Bangladeshi science journalism. These wire services provide a constant flow of science news, aggregating reports from their global bureau networks and from the international scientific press, that Bangladeshi media organizations can subscribe to and republish. The convenience and cost-effectiveness of wire service science content makes it attractive for Bangladeshi newsrooms that lack the capacity to produce original science coverage on international topics.

But the reliance on wire service science content has significant limitations. Wire service science reporting is produced primarily for an international audience, and the framing of international science news for that audience often emphasizes the most sensational and immediately newsworthy aspects of scientific findings in ways that obscure the context and caveats that would be most important for Bangladeshi readers. Wire service coverage of climate science, for instance, tends to focus on new research findings and extreme weather events in ways that capture attention but may not convey the systemic nature of the climate threat or its specific implications for Bangladesh's situation.

More fundamentally, wire service science coverage is organized around the information priorities of the international scientific community and the news values of international newsrooms, which may not align well with the specific scientific priorities of Bangladesh. A major new study on the genetics of a disease that primarily affects European populations will receive extensive wire service coverage, while a study of comparable methodological significance on a disease primarily affecting South Asian populations may receive no wire

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coverage at all. The Bangladeshi science journalist who relies primarily on wire services for her sense of what is scientifically important is importing an agenda that may systematically undervalue the research most relevant to her readers.

The development of regional science news networks, specifically oriented toward South Asian scientific priorities and audiences, is a potential partial remedy for this problem. The Science and Development Network (SciDev.Net), a specialized science journalism platform with a strong focus on developing world issues, has provided some of this function, but its coverage of Bangladeshi science has been limited by resource constraints and editorial capacity. The development of a robust regional science journalism network centered in South Asia, potentially anchored by the major press agencies of India, Bangladesh, and Pakistan with support from international scientific institutions and journalism development organizations, remains an aspiration rather than an achieved reality.

21.3 The Platform Governance Problem: Facebook, Misinformation, and the Bangladeshi Information Ecosystem

The governance of social media platforms in Bangladesh has been a central concern of both science journalism and press freedom advocacy since the mid-2010s. Facebook's dominant position in the Bangladeshi information ecosystem, which Chapter Fifteen examined in the context of technology journalism, has specific implications for science journalism that deserve analysis from the political economy perspective.

The political economy of Facebook's relationship with Bangladesh can be understood through the lens of what the legal scholar Shoshana Zuboff has called "surveillance capitalism": the economic logic through which digital platforms generate profit by collecting behavioral data from their users, using that data to predict and modify user behavior, and selling those predictions to advertisers and other clients. In this economic model, the platform's interest in user data collection creates strong incentives to maximize the time users spend on the platform and the emotional intensity of their engagement, which in turn creates incentives to amplify content that generates strong emotional reactions, including fear, outrage, and excitement.

For science journalism, the surveillance capitalism logic has specific and damaging implications. Scientific findings that are accurately communicated but emotionally modest, that report incremental progress rather than revolutionary breakthroughs, that convey appropriate uncertainty rather than false confidence, and that describe complex systemic problems rather than simple villains and victims, tend to perform poorly in the algorithmic systems of surveillance capitalism platforms. The science journalist who understands this dynamic can consciously develop narrative strategies that communicate scientific complexity in ways that are emotionally engaging without being misleading, but this is a demanding creative challenge that requires both scientific understanding and communicative sophistication.

Facebook's specific content moderation failures in Bangla have been extensively documented by researchers including those at the Oxford Internet Institute and at the Digital Rights Foundation. These failures, which allow health misinformation, false information about environmental

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events, and disinformation about agricultural and food safety issues to circulate without correction, directly undermine the impact of accurate science journalism by creating a competitive information environment in which false information can reach larger audiences more quickly than accurate coverage. The 2021 communal violence incidents in Bangladesh, in which false information spread on Facebook contributed to mob attacks on Hindu communities, demonstrated the potentially lethal consequences of platform governance failures in the specific Bangladeshi context.

The Meta corporation's response to criticism of its content moderation failures in Bangla has been, by most accounts, inadequate relative to the scale and severity of the problem. The company employs a small number of Bangla-language content moderators relative to the enormous volume of Bangla-language content on its platforms, and its automated content moderation systems have been shown to be significantly less effective in Bangla than in English. The company's position that its content moderation responsibilities are limited to its own platform policies, rather than extending to the broader social consequences of its algorithmic amplification decisions, is a contested legal and ethical position that is likely to face increasing regulatory challenge as the governance of platform companies becomes more assertive globally.

The Bangladeshi government's regulatory approach to platform governance has been characterized, under both the Hasina regime and the Yunus interim government, by an authoritarian impulse toward content control that actually serves the interests of the platforms rather than addressing the structural problems of algorithmic amplification. Governments that focus on removing specific pieces of content they find objectionable, whether on grounds of national security, religious sensitivity, or protection of official dignity, are engaging with the symptom rather than the disease. The structural problems of algorithmic amplification of emotionally resonant content, inadequate investment in local language content moderation, and the absence of transparency in algorithmic decision-making are the root causes of the platform governance failures that produce health misinformation, science denial, and communal violence information. These structural problems require structural regulatory solutions, including requirements for algorithmic transparency, algorithmic impact assessments, and proportionate investment in local language content moderation, rather than ad hoc content takedown requests.

Chapter Twenty-Two: Human Rights Law, Press Freedom Frameworks, and the International Jurisprudence of Science Journalism

22.1 The International Human Rights Framework and Its Application to Science Journalism

The international human rights framework that protects freedom of expression and press freedom is not merely a set of aspirational principles: it is a body of legally binding international law that has been ratified by Bangladesh and that creates both rights and obligations that are directly relevant to science journalism. Understanding this legal framework, its philosophical

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foundations, its institutional implementation mechanisms, and its specific application to science journalism, is an essential component of the sophisticated science journalist's knowledge base.

The foundational document of the international human rights system is the Universal Declaration of Human Rights, adopted by the United Nations General Assembly in 1948. Article 19 of the UDHR states: "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers." This formulation, while not legally binding in itself as the UDHR is a declaration rather than a treaty, has been extraordinarily influential in establishing the normative standard for freedom of expression in international law.

The binding treaty instrument that gives legal force to the principles of Article 19 of the UDHR is the International Covenant on Civil and Political Rights (ICCPR), which Bangladesh ratified in 2000. Article 19 of the ICCPR provides that everyone shall have the right to hold opinions without interference, that everyone shall have the right to freedom of expression including the freedom to seek, receive and impart information and ideas of all kinds regardless of frontiers, and that the exercise of these rights carries special duties and responsibilities and may be subject to certain restrictions, but only those provided by law and necessary for the protection of the rights and reputations of others, national security, public order, public health, or morals.

The three-part test for permissible restrictions on freedom of expression established by the ICCPR jurisprudence, developed through the decisions of the UN Human Rights Committee and elaborated in the Committee's General Comment No. 34 (2011) on Article 19, requires that any restriction on freedom of expression must be: prescribed by law (meaning the restriction must be adequately accessible and formulated with sufficient precision); necessary for a legitimate aim listed in Article 19(3) (meaning it must be proportionate to the aim pursued and not impose restrictions beyond what is necessary); and applied in a non-discriminatory manner. The application of this three-part test to the Digital Security Act and its successor legislation in Bangladesh is straightforward: these laws fail the necessity and proportionality requirements because their vague and overbroad provisions impose restrictions on expression that go far beyond what is necessary to protect the legitimate interests they purport to serve.

The General Comment No. 34 is particularly important for science journalism because it contains specific provisions about the protection of scientific expression and reporting. The Committee noted that the ICCPR's protection of freedom of expression extends to "expression that may be regarded by some as deeply offensive" and to "commentary on one's own and on others' public affairs, as well as commentary on public figures." In the context of science journalism, this means that reporting on scientific controversies, critical coverage of government scientific institutions, and investigation of corporate influence on scientific research are all protected by the ICCPR even when they are embarrassing or damaging to powerful actors.

22.2 The Right to Science and Its Jurisprudential Implications for Science Journalism

One of the most important and least-known provisions of international human rights law for science journalism is the right to "enjoy the benefits of scientific progress and its applications,"

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which is guaranteed by Article 15 of the International Covenant on Economic, Social and Cultural Rights (ICESCR), to which Bangladesh is also a party. This right, known informally as the "right to science," has been relatively underdeveloped in international human rights jurisprudence compared to civil and political rights, but it has been the subject of growing scholarly and activist attention since the early 2000s and was the subject of an important General Comment by the UN Committee on Economic, Social and Cultural Rights in 2020.

The jurisprudential implications of the right to science for science journalism are significant in at least three respects. First, the right implies that states have an obligation to ensure that their populations have access to the benefits of scientific progress, which in turn implies an obligation to ensure the free flow of scientific information to the public. A media regulatory framework that systematically suppresses accurate scientific reporting about public health threats, environmental hazards, or food safety problems is inconsistent with this obligation, because it prevents the population from enjoying the benefits of the science that reveals those threats.

Second, the right to science implies a right to access scientific knowledge, which has been interpreted by the UN Special Rapporteur on Cultural Rights to include a right of access to the scientific literature. The open access argument, discussed in Chapter Eighteen, has a human rights dimension: if scientific knowledge that is relevant to public health, environmental protection, and food security is locked behind commercial paywalls that are inaccessible to most people in developing countries, this constitutes a restriction on the right to benefit from scientific progress that states have an obligation to address.

Third, and most controversially, the right to science has been interpreted to include a right to scientific inquiry: a right of scientists to pursue research without political interference and a right of the public to know the results of scientific inquiry even when those results are inconvenient for powerful interests. This interpretation, while contested, has important implications for science journalism in Bangladesh, where political pressure on scientific institutions has historically constrained the public availability of scientific findings on politically sensitive topics.

The philosophical foundation of the right to science connects to a broader tradition of political philosophy about the relationship between knowledge, democracy, and freedom that is worth examining in some depth. John Dewey's pragmatist philosophy, particularly his analysis of the relationship between scientific inquiry and democratic governance in "The Public and Its Problems" (1927) and "Logic: The Theory of Inquiry" (1938), argued that democracy requires a scientifically informed public because democratic self-governance depends on the capacity of citizens to make judgments about complex social problems that are themselves empirical questions. The suppression of scientific information, in Dewey's framework, is not merely a restriction on individual liberty: it is an attack on the epistemological foundations of democratic self-governance.

Jurgen Habermas's theory of communicative rationality and the public sphere, which has been enormously influential in thinking about the role of journalism in democratic life, similarly grounds the right to scientific information in the requirements of democratic deliberation. For

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Habermas, the public sphere, that domain of social life in which citizens engage in rational-critical discussion of public affairs, requires that deliberation be based on accurate information and conducted according to norms of reasoned argument rather than strategic manipulation. Science journalism that provides accurate, accessible scientific information for public deliberation on complex issues including climate policy, food safety, pharmaceutical regulation, and environmental protection is, in Habermas's framework, performing an essential function for democratic self-governance. And media regulatory systems that suppress accurate scientific journalism are attacking the communicative foundations of democracy itself.

The tension between this philosophical account of science journalism's democratic function and the actual practice of media regulation in Bangladesh is acute and sustained. The legal instruments that have been deployed against science journalists in Bangladesh, from the Official Secrets Act and the Defamation Laws of the colonial era through the ICT Act, the Digital Security Act, and the Cyber Security Act of the post-independence period, all represent exercises of state power against the communicative conditions that democratic theory requires. Understanding the philosophical stakes of this conflict is essential for the science journalist who wants to understand her work not just as a profession but as a vocation with genuine political and ethical significance.

22.3 The UNESCO Recommendations on Science Communication and Their Jurisprudential Status

UNESCO's recommendations on science communication, including the 2021 Recommendation on Open Science and the 1974 Recommendation on Science and Scientific Researchers (revised 2017), while formally non-binding in the strict legal sense, carry significant normative authority that shapes international discourse and diplomatic engagement with member states' science policies. Understanding the content and authority of these recommendations is relevant for Bangladeshi science journalists who want to invoke international norms in their advocacy for better science communication infrastructure.

The 2021 UNESCO Recommendation on Open Science is particularly important for the access dimension of science journalism. The recommendation, which was adopted by all 193 UNESCO member states including Bangladesh, commits them to a set of principles and policy commitments including making publicly funded research openly accessible, investing in the infrastructure for open science, removing barriers to the participation of developing country researchers and scientists in global scientific knowledge production, and promoting science literacy and public understanding of science. Bangladesh's commitment to these principles provides a legitimate basis for domestic advocacy for open access policies, improved science communication infrastructure, and support for science journalism.

The UN Special Rapporteur on Freedom of Expression, whose mandate includes monitoring and reporting on restrictions on freedom of expression worldwide, has addressed the relationship between science communication and freedom of expression in several important reports. The 2016 report by Special Rapporteur David Kaye on the right to access to the internet made important arguments about the relationship between digital access and the right to freedom of

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expression that are directly relevant to science journalism in Bangladesh's digital environment. The 2019 report by Special Rapporteur David Kaye on disinformation and freedom of expression provided important guidance on the relationship between government responses to misinformation and freedom of expression that is directly applicable to the debate about digital security legislation in Bangladesh.

The jurisprudential tradition of the European Court of Human Rights, while not directly binding on Bangladesh, offers an important comparative reference point for understanding how international human rights law has been applied to press freedom cases that are analogous to those arising in Bangladesh. The ECHR has developed an extensive jurisprudence on the protection of journalists' sources, the limits of defamation law as applied to public figures and public interest reporting, the requirements of proportionality in state restrictions on expression, and the specific protections applicable to political speech and speech on matters of public concern. This jurisprudence, while developed in the European context, articulates principles that are grounded in the same international human rights framework that Bangladesh has ratified, and it provides useful guidance for understanding the standards against which Bangladeshi law should be measured.

22.4 The Anti-Terrorism Framework and Its Application to Journalists: A Case Study in Jurisprudential Overreach

The application of anti-terrorism legislation to journalists covering sensitive political and security topics is one of the most alarming trends in global press freedom, and Bangladesh has been among the countries where this trend has manifested in particularly disturbing forms. The detention of journalists Anis Alamgir and Shaukat Mahmood under the Anti-Terrorism Act in late 2025, characterized by Amnesty International as a direct violation of international human rights obligations, represents a specific and recent illustration of the jurisprudential overreach that occurs when broadly drafted counter-terrorism laws are applied to expression and reporting that falls well within the protected domain of freedom of expression under international human rights standards.

The jurisprudential analysis of this situation requires attention to several distinct but related questions. The first is the scope of legitimate restrictions on expression in the interest of national security and public order. International human rights law clearly permits states to restrict expression that constitutes incitement to imminent violence or that directly contributes to specific terrorism threats. What it does not permit is the application of broad and vaguely worded national security provisions to expression that is merely critical of government policy, that reports on politically sensitive topics, or that challenges official narratives about security threats. The three-part test established by ICCPR Article 19 jurisprudence, discussed above, requires that any restriction be necessary and proportionate: the detention of journalists for their reporting cannot meet this standard when the reporting in question does not directly incite violence or contribute to specific security threats.

The second jurisprudential question is the relationship between anti-terrorism legislation and freedom of the press in a democratic society. The Johannesburg Principles on National Security,

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Freedom of Expression and Access to Information (1995), while not formally binding, represent an authoritative statement by international legal experts of the principles that should govern the relationship between security concerns and freedom of expression. The Principles state, among other things, that expression may not be restricted on national security grounds unless the government can demonstrate that the expression is intended to incite imminent violence, is likely to incite such violence, and represents a direct and immediate connection to the likely occurrence of such violence. Reporting on political events, including reporting that is critical of the government or that documents alleged government misconduct, cannot meet this standard.

The third question is what legal and institutional mechanisms are available to journalists who are unjustly prosecuted under anti-terrorism or other security legislation. At the domestic level, the fundamental rights provisions of the Bangladesh Constitution, particularly Articles 31, 32, 39, and 44, provide a basis for constitutional challenges to legislation that imposes disproportionate restrictions on freedom of expression. The Supreme Court's appellate jurisdiction includes the authority to review the constitutionality of legislation, and there is a small but significant body of case law in which the courts have struck down or limited the application of legislation that unreasonably restricts constitutional rights.

At the international level, the Optional Protocol to the ICCPR, which Bangladesh has not yet ratified, would provide an important additional mechanism by allowing individuals to submit communications to the UN Human Rights Committee after exhausting domestic remedies. Bangladesh's non-ratification of the Optional Protocol is a significant gap in the accountability architecture for press freedom violations, and its ratification is one of the reforms that international press freedom organizations have consistently called for.

The political philosophy of John Stuart Mill provides a foundational argument against the use of anti-terrorism legislation to suppress political journalism. Mill's "On Liberty" (1859), which remains one of the most influential defenses of freedom of expression in the liberal political tradition, argued that the suppression of opinion, even potentially false or dangerous opinion, is almost never justified because of the uncertainty of truth claims, the value of diverse perspectives for arriving at truth, and the dangers of established orthodoxies becoming petrified and losing their rational basis. Mill's harm principle, which holds that the only legitimate ground for restricting individual liberty is the prevention of harm to others, clearly cannot be satisfied by the detention of journalists for reporting on political events: the harm, if any, is the abstract and speculative harm of criticism to official reputation, not the concrete and direct harm to specific individuals that Mill's principle requires.

Chapter Twenty-Three: Comparative Legal Systems and Science Journalism: What Bangladesh Can Learn and What It Can Teach

23.1 The Comparative Legal Framework: Methodology and Its Challenges

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Comparative law is both a method and a discipline: a way of understanding legal systems by examining them in relation to each other, and a scholarly tradition that has produced sophisticated frameworks for analyzing the similarities and differences between legal systems across different countries and cultures. For Bangladeshi science journalism, comparative legal analysis is valuable not as a means of identifying foreign models to be imported wholesale, but as a way of understanding the range of possible legal arrangements for governing the relationship between the press, science, and the state, and of identifying which arrangements best serve the goals of democratic governance, public health, environmental protection, and epistemic justice.

The methodological challenge of comparative law, as scholars including Otto Kahn-Freund, Pierre Legrand, and Gunter Teubner have argued, is that legal rules cannot be understood in isolation from the social, cultural, and institutional contexts within which they operate. The German criminal defamation law that provides strong protection for public figures' reputations cannot be simply transplanted into the Bangladeshi context without understanding that it operates within a German institutional context that includes an independent judiciary, a well-resourced legal aid system, and a culture of civil legal dispute resolution that are all very different from the Bangladeshi context. The risk of what Kahn-Freund called "legal transplants" that fail to take root because their institutional conditions are absent is a genuine and recurring problem in comparative law.

With this methodological caution in mind, comparative legal analysis can nonetheless illuminate important options for the development of Bangladeshi media law that would better support science journalism. The comparative material that is most directly relevant includes: the experience of other South Asian countries, particularly India and Sri Lanka, with media regulation and press freedom; the legal frameworks for protecting journalists' sources that have been developed in various European and North American jurisdictions; the approaches to balancing defamation law and press freedom that different jurisdictions have adopted; and the emerging legal frameworks for governing the relationship between digital platforms, content moderation, and freedom of expression.

23.2 The Indian Experience: Comparative Lessons from a Complex Neighbor

India's legal and institutional experience with press freedom and science journalism is the most directly relevant comparative material for Bangladesh, given the shared legal heritage, the geographic proximity, the similar political economy of a large federal democracy with a diverse and politically charged media landscape, and the specific history of shared legal institutions including the Indian Penal Code and its colonial-era provisions on sedition and defamation that have shaped both countries' press freedom landscapes.

India's press freedom situation has deteriorated significantly over the period since 2014, and particularly since the Narendra Modi government's second term began in 2019. India's ranking in the Reporters Without Borders Press Freedom Index fell from 136 in 2014 to 159 in 2024, a decline that reflects systematic pressure on critical journalism through government advertising withdrawal, sedition prosecutions, the use of financial intelligence authorities to harass media organizations, and the erosion of editorial independence through ownership concentration in the

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hands of conglomerates with close ties to the ruling Bharatiya Janata Party. Bangladesh, despite its own severe press freedom problems, ranked above India in the 2025 Reporters Without Borders index, a fact that reflects both genuine progress in Bangladesh under the interim government and the depth of India's press freedom crisis.

The Indian Supreme Court's jurisprudence on press freedom, however, provides important comparative material for Bangladeshi courts and advocates. The Supreme Court of India has, over many decades, developed a rich body of case law on freedom of speech and expression under Article 19 of the Indian Constitution that goes significantly beyond the protections available in Bangladeshi constitutional jurisprudence. Key decisions including Romesh Thappar v. State of Madras (1950), Sakal Papers v. Union of India (1962), and the Supreme Court's 2021 decision striking down the use of sedition law against media organizations have established principles of press freedom that are grounded in constitutional reasoning applicable, with appropriate modifications, to the Bangladeshi constitutional framework.

The Indian experience with the Right to Information Act is another important comparative resource. India's RTI Act of 2005, widely considered one of the most effective freedom of information laws in the developing world, has been used extensively by Indian journalists, including science journalists, to access government data on environmental monitoring, pharmaceutical regulation, clinical trials, and public health program performance. The experience of Indian RTI practice offers important lessons for the strengthening of Bangladesh's own Right to Information Act, which has been significantly underutilized as a tool for science journalism.

The Indian experience with biotechnology regulation provides a particularly illuminating comparative case study for Bangladeshi science journalism. India's experience with the regulatory process for GM crops, including the lengthy and controversial regulatory review of Bt brinjal (which India declined to approve, unlike Bangladesh) and the ongoing debate about the regulation of genetically modified mustard, illustrates the institutional and political dynamics of biotechnology governance in a South Asian democracy in ways that are directly relevant to the Bangladeshi experience with Bt brinjal discussed in Chapter Fourteen.

23.3 Nordic Models of Scientific Transparency and Their Relevance to Bangladesh

The Nordic countries, particularly Sweden, Norway, Finland, and Denmark, have developed legal frameworks for governmental transparency and access to information that are widely considered among the most effective in the world, and they provide an important reference point for discussions of what a genuinely open and accountable science-policy system in Bangladesh might look like. The Swedish principle of offentlighetsprincipen (the principle of public access to official documents), which dates from the Freedom of the Press Act of 1766, establishes a presumption that all official documents are public unless they fall within one of a carefully defined set of exemptions, and gives citizens and journalists a legally enforceable right to access official documents including scientific and technical reports prepared for government use.

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The application of this principle to science journalism would be transformative in Bangladesh. If the reports of government scientific agencies, the findings of commissioned research studies, the inspection records of the DGDA and the Department of Environment, and the environmental impact assessments submitted by industrial companies were presumptively public and subject to legally enforceable disclosure rights, science journalism in Bangladesh would have access to a dramatically expanded base of primary material for its investigations. The existing Right to Information Act of 2009 theoretically provides some of these rights, but its implementation has been limited by weak enforcement mechanisms, broad exemptions, and a bureaucratic culture of information hoarding that has developed over decades of authoritarian governance.

The Nordic models also offer lessons in the governance of scientific integrity and research ethics. The Norwegian National Research Ethics Committees, the Swedish Research Misconduct Authority, and similar bodies in Denmark and Finland provide independent oversight of the ethical conduct of research and the integrity of research findings, with the authority to investigate allegations of research misconduct and to publish their findings publicly. The existence of these bodies creates accountability mechanisms for scientific institutions that serve both the integrity of science and the interests of science journalism, by providing a formal and transparent process for investigating and publicizing cases of data fabrication, plagiarism, and other forms of research misconduct.

Bangladesh lacks equivalent institutions, and the development of research ethics governance is one of the areas where comparative learning from international experience could most directly benefit the ecosystem within which science journalism operates. The Bangladesh Medical Research Council and similar bodies perform some research ethics review functions, but their independence, capacity, and transparency are limited compared to the Nordic models. The University Grants Commission has adopted research integrity policies that are still in their early stages of implementation. The development of genuinely independent research ethics oversight, with public accountability and transparent processes, would provide science journalists with both better data about research quality and better institutional mechanisms for holding scientists and institutions accountable for misconduct.

23.4 The South African Experience: Constitutional Science Journalism in a Post-Apartheid Context

South Africa's post-apartheid constitutional framework, which includes an elaborate bill of rights and a strong tradition of constitutional litigation, provides an important comparative model for understanding how constitutional provisions can be used to support science journalism and protect the epistemic conditions necessary for democratic governance. The South African Constitution of 1996 is widely considered one of the most progressive in the world in its protection of fundamental rights, and it has been interpreted by the Constitutional Court in ways that have profound implications for the relationship between science, the state, and the press.

Section 16 of the South African Constitution, which guarantees freedom of expression including freedom of the press and other media and freedom to receive or impart information or ideas, has been interpreted by the Constitutional Court to provide strong protection for journalism on

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matters of public concern, including investigative reporting on scientific and environmental issues. The Court's judgment in National Media Ltd. v. Bogoshi (1998) established the principle that the media are protected from defamation liability for the publication of false information provided they acted reasonably, which in South African law means acting in accordance with responsible journalism standards. This "reasonableness" defense, which is more protective of journalism than the strict liability approach of some other jurisdictions, recognizes that journalists must make editorial judgments under time pressure and with incomplete information, and that holding them to a standard of absolute truth would have a chilling effect on legitimate reporting.

The South African experience with the Protection of Personal Information Act (POPIA) of 2013, which creates a comprehensive data protection framework that includes provisions specifically protecting journalistic data and research data from data protection requirements that would otherwise restrict their use, offers important comparative material for Bangladesh's developing data governance framework. The draft Personal Data Protection Act that has been under discussion in Bangladesh in recent years needs to include equivalent protections for journalistic and research data if it is not to create significant new obstacles for data journalism and for the research that provides the evidence base for science journalism.

The post-apartheid South African experience with environmental justice litigation also provides important models for understanding how constitutional rights can be used to pursue accountability for environmental harm. The Constitutional Court's interpretation of the right to an environment not harmful to health or well-being, guaranteed by Section 24 of the Constitution, has supported a body of environmental litigation that has forced government agencies and corporations to address environmental hazards with a level of urgency that administrative enforcement alone would not have achieved. Bangladeshi environmental lawyers and science journalists can draw on this jurisprudential tradition in making arguments about the constitutional dimensions of environmental accountability.

Chapter Twenty-Four: The Philosophy of Cosmopolitan Knowledge and Science Journalism in the Global South

24.1 Epistemic Justice, Colonial Science, and the Decolonization Debate

One of the most important and most contested intellectual developments in the philosophy of science over the past decade has been the growing engagement with questions of epistemic justice and the decolonization of knowledge. These ideas, which emerged initially from feminist philosophy of science and from postcolonial theory and have been developed most influentially by philosophers including Miranda Fricker (whose concept of "epistemic injustice" was developed in her 2007 book of that name), Gayatri Chakravorty Spivak, Walter Mignolo, and Boaventura de Sousa Santos, argue that the dominant forms of scientific knowledge production embody and reproduce the power asymmetries of colonial and post-colonial societies.

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The concept of epistemic injustice, as Fricker develops it, has two principal forms: testimonial injustice, which occurs when a knower receives less credibility than she deserves because of her social identity (because she is a woman, a person of color, a member of a low-caste group, or a rural poor person, her testimony is automatically discounted by those who are accustomed to treating such persons as not properly authoritative speakers), and hermeneutical injustice, which occurs when a knower is unable to understand her own experience because the available conceptual resources do not capture what she is undergoing (classic examples include the lack of a concept of "sexual harassment" before the women's movement developed it, or the lack of adequate concepts for describing the specific experience of indigenous communities whose relationship to land and place is not captured by the concepts of Western liberal property law).

Both forms of epistemic injustice are present in the relationship between international science and Bangladeshi communities. Testimonial injustice manifests when the knowledge of Bangladeshi farmers about their own land, water, and agricultural conditions is systematically discounted in favor of the assessments of visiting researchers with institutional credentials. Hermeneutical injustice manifests when the experiences of climate-displaced communities, whose relationship to place and livelihood is being transformed by processes that are inadequately captured by the standard metrics of climate vulnerability assessment, are rendered invisible by the available conceptual frameworks of climate science and climate journalism.

For science journalism in Bangladesh, the epistemic justice framework suggests a set of important practical commitments: to actively seek out and amplify the knowledge of communities that are epistemically marginalized by dominant scientific and institutional frameworks; to challenge the testimonial credibility assessments that systematically discount the authority of poor, rural, and otherwise marginalized knowledge-holders; to be alert to the ways in which available conceptual frameworks may render important aspects of Bangladeshi experience invisible or unspeakable; and to contribute to the development of new conceptual resources that can capture experiences and processes that current frameworks miss.

Boaventura de Sousa Santos's concept of the "sociology of absences," developed in works including "Epistemologies of the South" (2014), provides a useful analytical framework for this project. The sociology of absences asks: what does the dominant knowledge system make absent, ignore, or render invisible? In the Bangladeshi context, the sociology of absences points toward the traditional ecological knowledge of fishing communities whose understanding of the Sundarbans and its dynamics has been developed over generations of careful observation and practice; toward the knowledge of indigenous communities in the Chittagong Hill Tracts about their forest ecosystems and the specific forms of environmental degradation they have experienced; toward the knowledge of garment workers about the occupational health risks of their workplaces; and toward the knowledge of women farmers about the specific gendered dimensions of climate vulnerability and agricultural change.

24.2 Cosmopolitanism, Local Knowledge, and the Science Journalist's Epistemological Position

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The concept of cosmopolitanism, which in its philosophical form refers to the moral view that all human beings are members of a single global community and that this membership creates obligations of justice and solidarity that transcend national and cultural boundaries, has important implications for how science journalism in Bangladesh should position itself in relation to both international and local knowledge traditions.

The cosmopolitan commitment to universal standards of scientific rigor and journalistic integrity is an important corrective to forms of local parochialism that would use cultural specificity as an excuse for lower standards of evidence or accountability. The science journalist who defends inadequate scientific methodology by reference to the need for culturally adapted science is not serving epistemic justice: she is providing cover for practices that harm the communities she claims to be defending. International standards of peer review, clinical trial design, epidemiological methodology, and environmental monitoring are valuable not because they originate in Western institutions but because they embody accumulated wisdom about how to produce reliable knowledge about complex empirical phenomena.

But cosmopolitanism also requires, as Kwame Anthony Appiah has argued in "Cosmopolitanism: Ethics in a World of Strangers" (2006), genuine engagement with and respect for the local knowledge traditions that are embedded in specific cultural and historical contexts and that may capture important aspects of reality that universal scientific frameworks miss. The Bangladeshi science journalist who is genuinely cosmopolitan in Appiah's sense is not one who simply adopts the knowledge standards and professional norms of the international scientific community: she is one who engages critically with both international science and local knowledge, using each to illuminate the limitations of the other.

This epistemological position requires a form of professional modesty that is genuinely difficult to maintain. The science journalist who has worked hard to develop scientific literacy and to earn credibility with scientific institutions faces a real temptation to dismiss community knowledge that appears to conflict with scientific findings, particularly in contexts where such knowledge may be associated with traditional practices or religious beliefs that the journalist finds personally unconvincing. And the science journalist who has been shaped by the advocacy traditions of the environmental and public health movement may be tempted to privilege community accounts of harm and injustice over scientific evidence that challenges those accounts, particularly when the scientific evidence comes from institutions with obvious conflicts of interest.

The most sophisticated science journalism navigates between these temptations by maintaining a commitment to evidence that is genuinely open to multiple forms of evidence, including community observation and experience alongside formal scientific data, and that is genuinely skeptical of all sources, including both scientific institutions with commercial interests and community advocates with political ones. This is an epistemic position that requires ongoing, active effort to maintain, and it is the position toward which science journalism education should orient students.

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24.3 The Politics of Science Communication in Bangla: Language, Translation, and the Production of Scientific Knowledge

The question of language in science communication deserves philosophical attention that goes beyond the practical translation challenges discussed in Chapter One. The relationship between language and scientific thought is not a simple one of form and content, in which the same knowledge can be expressed equally well in any language. Language shapes thought, and the specific linguistic resources of Bangla, including its conceptual vocabulary, its metaphorical traditions, its grammatical structures, and its registers of formal and informal discourse, both enable and constrain the kinds of scientific thinking that can be effectively communicated in it.

The philosophy of language, from Ludwig Wittgenstein's observation that "the limits of my language are the limits of my world" to Benjamin Lee Whorf's Sapir-Whorf hypothesis about the relationship between linguistic structure and cognitive categories, has produced a rich if contested tradition of thought about the ways in which language shapes the possibilities of thought and expression. For science journalism in Bangla, the most immediately relevant question is not the strong form of the Whorfian hypothesis (which would claim that Bangla-speaking people are cognitively unable to think certain thoughts that English-speaking people can think) but the more modest claim that the conceptual resources available in a language at a given historical moment shape the ease and naturalness with which certain ideas can be expressed.

The conceptual vocabulary available in Bangla for discussing climate change, epidemiology, genomics, and other domains of contemporary science has expanded dramatically over the past two decades, partly through the borrowing and adaptation of technical terms from English and partly through the development of Bangla neologisms by scientists, journalists, and educators working in these fields. The work of developing an adequate Bangla scientific vocabulary is ongoing and contested: there are genuine disagreements about whether to prefer phonetically adapted English terms (as is common in Indian Bengali usage) or to develop Bangla-root neologisms (as the Language Movement tradition might prefer), and these disagreements have political as well as linguistic dimensions.

The science journalist working in Bangla is necessarily an active participant in this vocabulary development, whether she intends to be or not. Every time she chooses how to render a technical term in Bangla, she is making a decision that has implications for how her readers will understand the concept and how they will relate it to other concepts in their existing knowledge. The choices she makes will influence how the term is used by other journalists, educators, and ordinary speakers. The responsibility implicit in this influence is one that Bangladeshi science journalists should take seriously and reflect on carefully.

The translation of scientific uncertainty is particularly challenging in Bangla, as in many languages. The probabilistic vocabulary that scientists use to express confidence in their conclusions, terms like "significant," "probable," "likely," and "may cause," have Bangla equivalents that do not always capture the same nuance of epistemic confidence. The statement that a study "found a statistically significant association between X and Y" can be rendered in

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Bangla in several ways that emphasize different aspects of the claim, and the choice between them has consequences for how readers understand the strength of the evidence. The science journalist who is sensitive to these translation challenges is better equipped to communicate scientific uncertainty accurately than one who treats translation as merely a matter of finding the closest available equivalent.

Chapter Twenty-Five: Global Climate Finance, International Aid, and the Political Economy of Bangladeshi Science

25.1 The Architecture of International Climate Finance and Its Implications for Science Journalism

The international climate finance system, through which wealthy countries and multilateral development banks provide funding for climate mitigation and adaptation in developing countries, is one of the most important and most complex institutional contexts for science journalism in Bangladesh. Bangladesh is both a major recipient of international climate finance and one of the most powerful advocates in international climate negotiations for more ambitious finance commitments. Understanding the political economy of international climate finance is essential for the science journalist who wants to cover climate policy in its full complexity.

The major channels of international climate finance to Bangladesh include the Green Climate Fund (GCF), established under the UNFCCC as the primary multilateral mechanism for channeling climate finance from wealthy countries to developing ones; the Climate Investment Funds administered by multilateral development banks including the World Bank and the Asian Development Bank; bilateral climate finance from major donor countries including the United Kingdom, Germany, Japan, and the United States; and the adaptation-focused financing provided through the Adaptation Fund, which Bangladesh has been among the most active users of among developing countries.

The science journalism relevant to international climate finance covers several distinct dimensions. The first is the scale question: is the total amount of climate finance available to Bangladesh adequate for the adaptation investment that climate vulnerability requires? The evidence on this question is clear and damning: the commitments made by wealthy countries in international climate negotiations consistently fall short of the funding actually needed, and the gap between what is committed and what is disbursed is often substantial. Bangladeshi science journalists who cover climate finance policy need to be able to evaluate these claims and counterclaims using the best available data on adaptation costs, finance flows, and the specific investment needs of different sectors and regions.

The second dimension is the quality question: is the climate finance that Bangladesh receives structured in ways that actually address the country's most pressing adaptation needs, or is it shaped primarily by the administrative preferences, risk management requirements, and strategic interests of the funders? The experience of climate adaptation finance in Bangladesh suggests

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that there are systematic mismatches between the priorities of international funders and the priorities of affected communities: large infrastructure projects that satisfy the administrative requirements of multilateral banks receive more funding than community-level resilience building; urban and peri-urban areas receive more attention than the rural communities and coastal populations that face the most severe climate impacts; and the financial instruments available (loans rather than grants) may impose debt burdens that are inappropriate for the poorest communities facing the most severe climate losses.

The third dimension is the accountability question: are the resources that flow through international climate finance mechanisms actually reaching the communities and purposes they are intended to serve, or are they being captured by administrative overhead, political patronage, and the interests of consultants and contractors? This question is directly relevant to investigative science journalism, which has important work to do in tracking the flow of climate finance from international sources to specific projects and communities and evaluating whether those projects are actually producing the adaptation outcomes they claim.

The fourth dimension is the emerging loss and damage question. The agreement reached at COP27 to establish a specific fund for loss and damage, and the operationalization of that fund in subsequent negotiations, represents a significant development in the international climate finance architecture that has direct implications for Bangladesh, one of the countries that has most vigorously advocated for loss and damage compensation. The loss and damage fund's governance structure, its capitalization, its access modalities, and the criteria for determining which losses and damages are compensable are all subjects of intense international negotiation and active Bangladeshi advocacy. Science journalists who understand both the scientific basis of loss and damage claims (the science of attribution, which allows researchers to estimate the contribution of climate change to specific extreme events and long-term trends) and the political economy of international climate finance are uniquely positioned to cover this story in its full depth.

25.2 Development Aid, Science, and the Problematic History of Expert-Driven Development

The broader history of international development aid to Bangladesh is an essential context for understanding the political economy of international science in the country. Bangladesh has been one of the largest recipients of international development aid per capita in the world, and its development trajectory, from one of the poorest and most disaster-prone countries in the world at independence in 1971 to a middle-income country with dramatically improved health and education indicators by the 2020s, has been shaped in complex ways by this international engagement.

The role of international experts, international research institutions, and international scientific frameworks in this development history is genuinely ambivalent. International expertise has made important positive contributions: the development of flood-resistant and drought-tolerant crop varieties with CGIAR collaboration, the design and implementation of the oral rehydration therapy that dramatically reduced cholera and diarrheal disease mortality, the development of the

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community health worker model that expanded primary health care coverage, and the scientific understanding of cyclone dynamics that has improved early warning systems and cyclone shelter design have all been shaped by international scientific engagement.

But international expertise has also driven development interventions that have been harmful, or have had significant unintended consequences, or have served the interests of the international development community more than those of the Bangladeshi people. The tubewell programs that inadvertently distributed arsenic to tens of millions of people, discussed earlier in this textbook, are the most dramatic example. The promotion of shrimp aquaculture as an export-oriented development strategy, which displaced traditional agricultural livelihoods and caused significant environmental damage to coastal ecosystems, is another. The promotion of specific agricultural technologies, including Green Revolution crop varieties that required chemical inputs, and later GM crops, by international research institutions and development organizations with a combination of genuine scientific conviction and institutional interest in the success of their approaches, has generated controversies whose consequences are still being worked out.

The science journalist who covers international development in Bangladesh needs to be equipped with a critical understanding of this ambivalent history. She needs to understand the mechanisms through which international development expertise shapes Bangladesh's scientific and policy agenda, the incentive structures that drive the behavior of international consultants and research institutions, and the historical record of which development interventions have worked, which have failed, and which have caused harm. This understanding provides essential context for evaluating current international development proposals, particularly those that involve new technologies or new institutional models that are promoted with the same combination of genuine scientific enthusiasm and institutional self-interest that has characterized previous rounds of development intervention.

Chapter Twenty-Six: The International Dimensions of Science Journalism Education and Professional Development

26.1 International Journalism Education Models and Their Limitations for Bangladesh

The major journalism schools and professional training organizations that provide the dominant models for journalism education globally are based primarily in the United States, the United Kingdom, and a small number of other wealthy countries. These institutions have developed sophisticated curricula for journalism education, including specialized programs in science journalism, health journalism, environmental journalism, and data journalism, that draw on decades of experience in teaching journalism practice and theory.

But as argued in Chapter Twenty, these models embody assumptions about the institutional context of journalism, the economic models of media organizations, the professional relationships between journalists and their sources, and the legal protections available to journalists, that do not transfer easily to the Bangladeshi context. The science journalism

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curriculum developed for a graduate program at Columbia or Berkeley assumes that students will work in newsrooms with editorial independence, adequate resources for long-form reporting, legal departments capable of defending challenging stories, and source relationships grounded in a culture of voluntary and protected disclosure that does not characterize the Bangladeshi media environment.

The challenge for Bangladeshi journalism education is to develop curricula and training models that draw on the best international thinking about science journalism while adapting it fundamentally to the specific conditions of Bangladesh. This is not a matter of lowering standards: the commitment to accuracy, rigorous evidence evaluation, editorial independence, and accountability to the public interest that characterizes good science journalism everywhere should be the core values of Bangladeshi science journalism education. But the specific institutional forms through which these values are expressed, the specific skills and knowledge that are most needed given the specific constraints and opportunities of the Bangladeshi context, and the specific ethical challenges that Bangladeshi science journalists face, are different from those that shape journalism education in wealthy democracies.

The development of a genuinely Bangladeshi science journalism curriculum requires engagement with several distinct intellectual traditions. It requires the philosophy of science, to equip students with the critical tools for evaluating scientific claims and understanding the social organization of knowledge production. It requires the political economy of Bangladesh, to equip students with the understanding of institutional power, economic interests, and political dynamics that shape the conditions within which they will work. It requires Bangladeshi legal and constitutional history, to equip students with the understanding of their legal rights and obligations and the frameworks for pursuing accountability through legal mechanisms. It requires the history of Bangladeshi journalism, to give students a sense of the professional tradition they are entering and the models of journalistic practice and courage that tradition contains. And it requires international comparative perspective, to give students a sense of the range of possible institutional arrangements and professional practices and to help them understand what is specific to Bangladesh and what is shared with journalists elsewhere.

26.2 Fellowship Programs, Institutional Capacity Building, and the Problem of Brain Drain

The international fellowship and training programs available to Bangladeshi science journalists create a specific and underappreciated problem for the development of domestic science journalism capacity: the problem of brain drain. Bangladeshi journalists who participate in prestigious international fellowship programs at institutions like the Knight Science Journalism program at MIT, the Reuters Institute for the Study of Journalism at Oxford, or the Dart Center for Journalism and Trauma at Columbia, gain valuable skills and institutional connections that can significantly enhance their professional capacity. But they also develop expectations, aspirations, and institutional relationships that may make it difficult to return to and remain in the Bangladeshi media environment, with its lower pay, greater constraints on editorial independence, higher legal risks, and more limited professional infrastructure.

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The result is that the journalists who benefit most from international training programs are often the ones who are best positioned to leave Bangladeshi journalism for more rewarding careers in international media organizations, development communications, or academic research. This is not a criticism of the individual journalists who make these choices: the rational response to a difficult professional environment is to seek better conditions elsewhere, and the aspirations of Bangladeshi journalists to participate in international journalism on equal terms with their peers from wealthier countries are entirely legitimate. But the aggregate effect of this pattern is a systematic loss of capacity from the Bangladeshi domestic journalism profession that is not fully compensated by the general enhancement of professional skills that fellowship programs produce.

The solution to this brain drain problem is not to restrict the mobility of Bangladeshi journalists or to prevent them from participating in international training programs. It is to invest in the domestic conditions that make quality science journalism viable and rewarding in Bangladesh: better pay, stronger legal protections, editorial independence, professional support structures, and career paths that allow specialization and expertise development. The international journalism training organizations that invest in Bangladeshi journalists should, as a condition of their investment, also advocate for the domestic institutional reforms that would allow those journalists to practice effectively in Bangladesh.

26.3 The Rise of Science Journalism Fellowships and Their Impact on the Bangladeshi Context Since 2024

The period since the political transition of August 2024 has seen a modest but significant increase in international attention to and investment in Bangladeshi science journalism capacity. Several international organizations have initiated or expanded programs specifically oriented toward supporting science and environmental journalism in Bangladesh during the transitional period, recognizing both the opportunities opened by the political change and the severe institutional challenges that the transition has created.

The CPRD-TCW Reporting Fellowship 2025, discussed in Chapter Thirteen, represents one specific example of this renewed investment, providing support for in-depth, evidence-based climate reporting by eight Bangladeshi journalists selected from a record number of applicants. The program's focus on climate journalism ahead of COP30 reflects both the global importance of climate reporting and the specific significance of Bangladesh's climate situation as a paradigm case for understanding climate impacts in the Global South.

Covering Climate Now's recognition of Bangladeshi journalist Thaslima Begum's work in its 2025 journalism awards represents a different dimension of international recognition: the acknowledgment by the global climate journalism community of the quality and importance of Bangladeshi climate journalism. This recognition is significant not only as an affirmation of individual work but as a signal to the Bangladeshi journalism community that internationally recognized quality is achievable and valued.

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The institutional implications of this recognition are worth taking seriously. The development of Bangladeshi science journalism capacity that is capable of producing internationally recognized work while remaining primarily oriented toward the needs of Bangladeshi audiences is precisely the kind of development that this textbook has argued for. The challenge is to ensure that international recognition does not become an end in itself, displacing the commitment to serving Bangladeshi readers in favor of producing content for international audiences and platforms that are more remunerative and more prestigious.

The digital newsroom revolution that has transformed journalism globally has specific implications for science journalism capacity development in Bangladesh. The tools of digital journalism, including data visualization software, GIS mapping tools, multimedia storytelling platforms, and collaborative investigation tools, are now available at low or no cost through open source and freely accessible platforms that were not available a decade ago. Bangladeshi science journalists who develop proficiency in these tools can produce journalism of significantly higher quality and impact than was possible with the print-only formats that dominated Bangladeshi journalism until recently. The challenge is providing the training, the institutional support, and the editorial models that allow these tools to be used effectively for science journalism purposes rather than merely for the production of visually attractive content without substantive investigative depth.

Chapter Twenty-Seven: Science Journalism, Democratic Theory, and the Future of the Bangladesh Public Sphere

27.1 Democratic Theory and the Public Sphere: Philosophical Foundations

The concept of the public sphere, introduced to political theory primarily through the work of Jurgen Habermas and developed and contested in subsequent decades by a wide range of theorists, provides the most important philosophical framework for understanding science journalism's role in democratic society. Habermas's original formulation of the public sphere, in "The Structural Transformation of the Public Sphere" (1962, translated into English in 1989), traced the emergence of a bourgeois public sphere in eighteenth-century Europe in which private individuals came together to engage in rational-critical discussion of public affairs, subjecting the authority of both state and church to the tribunal of reason.

For Habermas, the public sphere is not just a descriptive concept but a normative one: it describes both an actually existing historical phenomenon and a set of ideals about how democratic communication should be organized. The normative public sphere is characterized by open access (anyone may participate in deliberation on equal terms), rational discussion (arguments are evaluated on their merits rather than the social status of those who make them), and critical scrutiny of power (the authority of political and economic actors is subject to public justification and challenge). These norms, which Habermas later developed more systematically in his theory of communicative rationality and discourse ethics, provide the philosophical

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foundation for understanding journalism as an institution that serves democratic self-governance by creating the conditions for informed public deliberation.

Science journalism, in this framework, performs a specific and essential function: it provides the scientifically informed dimension of public deliberation, ensuring that decisions about complex matters, including public health policy, environmental regulation, agricultural technology, and the governance of digital platforms, are made on the basis of the best available evidence rather than ignorance, prejudice, or manipulation. Without science journalism, the public sphere is epistemically impoverished: it cannot effectively deliberate about the most important policy questions of our time because it lacks the scientific understanding those questions require.

Habermas's analysis of the structural transformation of the public sphere included a critical account of how the bourgeois public sphere of the eighteenth century was colonized and distorted by the growing power of commercial media organizations and political public relations in the twentieth century. The logic of commercial media, oriented toward entertainment and mass consumption rather than rational-critical deliberation, systematically displaced the argumentative and deliberative functions of the public sphere. Political public relations, developed originally in the United States and spreading globally through the twentieth century, systematically manipulated public opinion through the strategic management of information rather than genuine public argument.

In Bangladesh, this Habermasian story of public sphere colonization has a distinctive shape. The Bangladesh public sphere was colonized not primarily by commercial entertainment media (though that dimension is increasingly present) but by the combination of political patronage and media ownership concentration that characterized the Hasina period, and the combination of political violence and legal harassment that has characterized the period before and after. The structural condition of the Bangladeshi public sphere is one in which the conditions for rational-critical deliberation are systematically undermined by the institutional capture of media by political and economic power, and the intimidation of journalists who challenge that power.

The role of science journalism in the Bangladeshi public sphere must therefore be understood not just in terms of the technical function of information provision but in terms of its contribution to the conditions for genuine democratic deliberation. The science journalist who fights for access to environmental monitoring data, who challenges pharmaceutical companies' suppression of unfavorable clinical trial results, who documents the consequences of climate change for the communities most affected, and who investigates the conflicts of interest that shape government scientific policy, is not just serving her readers' immediate information needs: she is contributing to the conditions for a public sphere in which Bangladesh's most consequential collective decisions can be made on the basis of evidence, accountability, and reason.

27.2 The Crisis of Democratic Epistemology and Science Journalism's Response

The concept of "post-truth politics," which entered global political discourse following the 2016 Brexit referendum in the United Kingdom and the election of Donald Trump in the United States, describes a political condition in which emotional appeal and tribal identity have

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displaced factual argument as the primary determinants of political opinion. This phenomenon, whatever its causes, represents a profound challenge to the vision of science journalism as a contributor to epistemically rational democratic deliberation.

The "post-truth" diagnosis has been criticized on both empirical and theoretical grounds. Empirically, the claim that factual claims became less important to political discourse in 2016 than they previously were ignores the extensive history of political propaganda, ideological manipulation, and strategic misinformation that has characterized democratic politics throughout its history. The tobacco industry's manufactured doubt campaigns, the Bush administration's intelligence manipulation in the run-up to the Iraq War, and the systematic disinformation of authoritarian governments are all pre-2016 examples of the subordination of truth to political interest. Theoretically, the "post-truth" concept tends to locate the problem in the psychology of individual voters rather than in the institutional conditions that produce and distribute false information, thereby obscuring the structural analysis that is needed to address it.

Nonetheless, there is something genuinely new about the contemporary information environment that the "post-truth" discourse partially captures: the combination of social media's algorithmic amplification of emotionally resonant content, the collapse of the institutional authority of traditional media gatekeepers, the deliberate industrial-scale production of false information by state and non-state actors, and the growing sophistication of persuasion technologies including targeted advertising and artificial intelligence-generated content has created conditions in which the epistemological foundations of democratic deliberation are genuinely under threat.

For science journalism in Bangladesh, the "post-truth" phenomenon has specific manifestations that are shaped by the country's specific political and institutional context. The combination of political polarization, religious sensitivity, social media saturation, and weak institutional accountability that characterizes contemporary Bangladesh creates conditions in which misinformation can spread rapidly, scientific authority can be dismissed as politically motivated, and the epistemological norms that good journalism requires are difficult to maintain. The journalist who tries to report accurately on the science of climate change, vaccination, or food safety in this environment is not just competing with misinformation for her audience's attention: she is participating in a broader struggle over the epistemological conditions of democratic politics.

The response to this challenge must be multi-dimensional. At the level of journalistic practice, it requires the development of communication strategies that are both scientifically accurate and emotionally engaging: stories that connect the science to the lived experiences of readers, that convey appropriate uncertainty without undermining the communicative impact of valid findings, and that build rather than destroy trust in the institutions of evidence and expertise. At the level of institutional design, it requires the development of fact-checking organizations, science communication infrastructure, and media literacy programs that create a counterweight to the amplification of misinformation. At the level of platform governance, it requires regulatory frameworks that create incentives for platforms to invest in accurate science communication rather than merely maximizing engagement.

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27.3 Science Journalism, Civil Society, and the Construction of Bangladeshi Democratic Consciousness

The concept of democratic consciousness, a collectively held understanding of citizens' rights, governments' obligations, and the conditions necessary for democratic self-governance, is constructed through the interplay of civic education, political experience, media coverage, and cultural transmission. Science journalism's contribution to this construction of democratic consciousness is specific and important: it is the dimension of media coverage that connects citizens to the evidence-based knowledge they need to participate effectively in decisions about the most technically complex and consequential aspects of public policy.

In Bangladesh, the construction of a democratic consciousness that includes scientific literacy and evidence-based reasoning faces significant obstacles. The legacy of colonial education, which produced a system oriented toward administrative compliance rather than critical thinking, continues to shape the educational culture within which journalists are trained and audiences are formed. The dominance of religious authority in shaping what counts as legitimate knowledge creates specific challenges for science communication in areas where scientific findings appear to challenge religious sensibilities, including reproductive health, evolution, and the age of the universe. And the combination of poverty, political instability, and institutional failure that has shaped Bangladeshi public life since independence has produced a widespread skepticism about official institutions, including scientific institutions, that can be both a healthy democratic skepticism and a vulnerability to alternative epistemologies that serve political rather than evidential interests.

The development of what we might call a scientific public culture in Bangladesh, a collective disposition to evaluate public claims through evidence-based reasoning and to hold powerful institutions accountable for the consequences of their decisions, requires sustained investment in science education, science journalism, and the cultural infrastructure of public reasoning. This investment is not a luxury that can be deferred until Bangladesh achieves higher levels of economic development: it is a prerequisite for the kind of democratic governance that can actually address the existential challenges the country faces.

Civil society organizations, including human rights organizations, environmental advocacy groups, and professional associations of scientists and journalists, play an essential role in this project. The relationship between science journalism and civil society in Bangladesh is one of complex mutual dependence: civil society organizations provide journalists with evidence, analysis, and institutional support, while journalism provides civil society with the public amplification and accountability function that makes advocacy effective. The most sophisticated science journalism does not simply report on civil society's claims: it evaluates them critically, contextualizes them within the broader evidence base, and helps its audience understand the difference between evidence-based advocacy and strategic advocacy.

The relationship between science journalism and the broader democratic movement in Bangladesh, illustrated most dramatically by the student-led uprising of July-August 2024, deserves specific attention in this context. The uprising, which successfully removed a

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government that had systematically suppressed press freedom and undermined scientific integrity, was itself a manifestation of democratic consciousness: a collective assertion that citizens have the right to hold their government accountable and that the suppression of truth is a violation of fundamental rights. Science journalists who cover this political moment with the same rigor and critical intelligence they bring to other complex stories, who document both the genuine democratic aspirations the uprising represented and the complex institutional challenges and disappointments that have followed, are performing their democratic vocation at its most important and most demanding.

27.4 Toward a Theory of Bangladeshi Science Journalism as Democratic Institution

The preceding chapters of Part Three have mapped the international dimensions of science journalism in Bangladesh: the global science communication architecture, the political economy of international scientific institutions, the transnational advocacy networks, the human rights law framework, the comparative legal traditions, the philosophical debates about epistemic justice and cosmopolitan knowledge, and the democratic theory that underlies the whole enterprise. The time has come to synthesize these threads into a coherent account of what Bangladeshi science journalism should be and do, as an institution in and for a democratic society.

Bangladeshi science journalism, in this synthesis, is not simply a local application of international science journalism norms. It is, or should be, a distinctive intellectual and professional practice that draws on international scientific knowledge and professional standards while grounding itself in the specific history, politics, ecology, culture, and democratic aspirations of Bangladesh. It is a practice that serves democratic self-governance by providing citizens with the scientifically informed understanding they need to participate effectively in decisions about their own and their society's future. It is a practice that holds powerful institutions, including scientific institutions, government agencies, corporations, and international organizations, accountable for the consequences of their decisions. And it is a practice that amplifies the voices and the knowledge of the communities most affected by scientific and technological change while maintaining the critical distance from those communities that journalistic integrity requires.

This account of science journalism as democratic institution carries specific implications for how the field should be organized, supported, and educated. It implies that science journalism requires not just technical training in scientific literacy and journalistic skills but a broader formation in the political philosophy, the legal knowledge, the historical understanding, and the ethical reasoning that make it possible to practice journalism as a democratic vocation rather than merely a commercial activity. It implies that the institutional conditions for good science journalism, editorial independence, adequate resources, legal protection, and professional infrastructure, are not optional features but essential preconditions that must be actively constructed and defended. And it implies that the development of science journalism as a democratic institution is a collective project that requires the sustained engagement of journalists, editors, publishers, educators, civil society organizations, policymakers, and citizens rather than simply the individual excellence of talented journalists.

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Chapter Twenty-Eight: The Internal Conflicts of the Internationally Oriented Science Journalist

28.1 The Conflict Between International Standards and Local Reality

The science journalist who has been educated in international standards of science journalism practice and who aspires to participate in the global community of science journalism professionals faces a specific and characteristic set of internal conflicts that are different in important ways from those examined in the concluding chapters of Part Two. These conflicts arise from the tension between the international frameworks and standards she has internalized and the specific institutional, political, and economic conditions of Bangladeshi journalism within which she must actually practice.

The first of these conflicts is the tension between the professional norm of source independence, which international standards of science journalism strongly emphasize, and the institutional reality of the Bangladeshi science journalism context, in which the pool of credible and accessible independent scientific sources is small, sources who speak to journalists on matters critical of their institutions or the government face serious professional risks, and the informal networks through which source relationships are developed and maintained are often contaminated by political loyalty and institutional self-interest.

The science journalist who has been trained to rely primarily on independent expert sources, to be skeptical of official information, and to seek out dissenting scientific opinion faces the practical challenge that dissenting scientific voices in Bangladesh are rare, often professionally vulnerable, and sometimes reluctant to provide the specific, attributable comment that international professional standards require. The journalist who insists on attributable expert comment for every scientific claim in her stories may find herself unable to publish important stories at all, because no Bangladeshi scientist will go on record with a claim that challenges official scientific consensus or government policy.

The resolution of this conflict requires not simply the application of international standards but the development of contextually adapted practices that preserve the essential commitments of those standards, accuracy, independence, and accountability, while accommodating the specific constraints of the Bangladeshi context. These practices might include: the use of international scientific sources and international scientific literature to provide evidential support for claims that domestic sources cannot safely make in their own names; the development of source protection practices that allow domestic sources to provide information without public attribution; the use of freedom of information requests to create a public record basis for stories that would otherwise depend on confidential sourcing; and the cultivation of deep, long-term relationships with scientific sources that are based on mutual trust and respect rather than transactional information exchange.

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The second major internal conflict of the internationally oriented science journalist is the conflict between the cosmopolitan commitments of her intellectual formation and the particularist demands of her journalistic vocation. The science journalist who has engaged seriously with the philosophy of epistemic justice and the decolonization of knowledge has a genuine commitment to amplifying marginalized forms of knowledge and challenging the testimonial injustice of systems that discount the knowledge of poor, rural, and otherwise marginalized communities. But she also has a professional commitment to accuracy and evidence that requires her to evaluate all knowledge claims critically, including those of the communities she is committed to serving, and to challenge claims that are inconsistent with the best available evidence even when challenging them risks being perceived as dismissing community knowledge.

This conflict has no clean resolution, and the science journalist who claims to have resolved it fully is probably being dishonest with herself. It requires continuous negotiation, case by case and story by story, between the commitment to amplifying marginalized voices and the commitment to accuracy and evidence. The most important thing the science journalist can do is to be transparent with herself and her readers about the tensions involved: to acknowledge when she is amplifying community knowledge that is not fully supported by formal scientific evidence, to explain her reasons for doing so, and to be equally honest about the limitations of formal scientific evidence in contexts where it is incomplete, methodologically compromised, or structurally biased.

The third major internal conflict concerns the relationship between international advocacy frameworks and domestic democratic legitimacy. The science journalist who works with and draws on international advocacy networks on climate, labor rights, pharmaceutical access, and press freedom is using the leverage of international norms and international attention to advance causes that she believes are genuinely in the public interest. But the international advocacy framework may not always be in complete alignment with the democratic preferences of the Bangladeshi public, and the use of international pressure to advance domestic policy change raises legitimate questions about democratic legitimacy and postcolonial sovereignty.

The resolution of this conflict requires a clear-eyed understanding of both the value and the limitations of international advocacy as a tool for domestic policy change. International advocacy is most legitimate when it is used to enforce commitments that Bangladesh has voluntarily assumed through the ratification of international human rights treaties, because in these cases international pressure is not overriding democratic decisions but enforcing them. It is most problematic when it is used to impose particular policy models that have not been democratically validated in Bangladesh, particularly when those models reflect the preferences of international donors or advocacy organizations rather than the specific needs and priorities of Bangladeshi communities.

28.2 Professional Identity, Critical Consciousness, and the Science Journalist's Self-Understanding

The development of professional identity is a complex psychological and intellectual process that takes place over the course of a career and is shaped by the interplay of formal education,

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professional experience, peer relationships, institutional culture, and the specific intellectual and ethical challenges that each journalist encounters in her practice. For the science journalist in Bangladesh, the development of professional identity is particularly challenging because the profession itself is relatively young, institutionally underdeveloped, and subject to pressures and contradictions that more established professional traditions have not fully resolved.

The concept of critical consciousness, which has been used in educational theory (following Paulo Freire's "Pedagogy of the Oppressed") and in feminist and postcolonial theory to describe the process through which individuals become aware of the social and political structures that shape their experience and develop the capacity to critically analyze and act against those structures, is applicable to the professional development of science journalists in ways that the conventional concept of professional training does not fully capture.

The critically conscious science journalist is not merely skilled: she understands the institutional, political, and epistemological frameworks within which her skill is deployed, and she brings that understanding to bear on her professional choices in ways that a purely technically trained journalist does not. She understands the political economy of the media organization she works for and the ways in which that political economy shapes what stories are possible to tell. She understands the sociology of the scientific institutions she covers and the ways in which institutional interests shape what scientists say and what they do not say. She understands the history of her profession in Bangladesh and the specific forms of complicity, resistance, and negotiation through which previous generations of journalists have navigated the pressures she faces. And she understands the philosophical stakes of her work: why accurate science journalism matters for democratic governance, epistemic justice, and the long-term health of the Bangladeshi public sphere.

This critical consciousness is not incompatible with professional competence and practical effectiveness: indeed, it is one of the most important foundations of those qualities. The journalist who does not understand the institutional pressures that shape what she is permitted to report, or the political economy that determines which stories are rewarded and which are suppressed, or the philosophical commitments that should guide her choices when accuracy and safety conflict, is not well equipped to navigate the complex terrain of Bangladeshi science journalism. Critical consciousness is not a luxury for the intellectually inclined: it is a professional necessity for anyone who aspires to practice science journalism at the level that Bangladesh's situation demands.

The development of critical consciousness is not complete at the end of a degree program: it is a lifelong project that requires sustained engagement with ideas, with colleagues, with the communities one covers, and with the ongoing experience of practice. The student who completes this textbook is not a critically conscious science journalist: she is, if she has engaged seriously with its arguments, someone who has begun to develop the intellectual foundations for critical consciousness. The development of those foundations into genuine professional wisdom requires years of practice, reflection, and engagement with the specific challenges and contradictions that Bangladeshi science journalism presents.

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Chapter Twenty-Nine: Controversies, Landmark International Cases, and Their Implications for Bangladesh

29.1 The Climategate Controversy and Its Lessons for Bangladeshi Science Journalism

The so-called "Climategate" controversy of 2009, in which thousands of emails between climate scientists at the University of East Anglia's Climatic Research Unit were hacked and selectively quoted by climate change deniers to suggest scientific misconduct, provides one of the most important lessons in the entire history of science journalism about the manipulation of scientific controversy for political ends. The controversy is relevant to Bangladeshi science journalism both as a case study in how manufactured scientific controversy is constructed and disseminated and as an illustration of the specific responsibilities that science journalists have when covering allegations of scientific misconduct.

The substance of the Climategate emails controversy, as multiple independent investigations conducted by the Royal Society, the University of East Anglia, the UK Parliament's Science and Technology Committee, and other bodies concluded, was that the emails revealed no evidence of scientific fraud or deliberate misrepresentation of data. The language used by scientists in private emails, which included dismissive comments about critics and expressions of frustration with freedom of information requests perceived as bad-faith harassment, was embarrassing and reflected cultural problems in the scientific community's handling of adversarial engagement, but it did not undermine the scientific evidence for anthropogenic climate change in any significant respect.

The journalistic handling of Climategate, particularly in the initial period before the independent investigations had been completed, ranged from careful and responsible to sensationalistic and irresponsible. Journalists who took the time to understand the scientific context, to read the emails in their entirety rather than relying on the selectively quoted versions circulated by climate skeptics, and to maintain appropriate epistemic humility about allegations that were being made in a highly politically charged context were able to provide their readers with accurate information about the significance of the controversy. Journalists who relied on the framing of climate skeptic websites and advocates, treated the controversy as equivalent to evidence of fraudulent scientific consensus, and failed to distinguish between culturally problematic behavior in private emails and evidence of scientific misconduct misled their readers and contributed to the weakening of public trust in climate science.

The lessons for Bangladeshi science journalists are direct. In a media environment characterized by politically motivated science skepticism, by the availability of hacked or leaked communications as tools of targeted reputational attacks, and by the rapid amplification of allegations through social media before they can be independently verified, the responsible handling of alleged scientific misconduct requires precisely the combination of scientific literacy, methodological patience, and political awareness that this textbook has been trying to develop. The science journalist who cannot evaluate the scientific significance of alleged

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misconduct, who does not understand the ways in which private communications can be deliberately misrepresented, and who does not recognize the political interests at work in specific attacks on scientific credibility is not equipped to serve her readers well in these situations.

29.2 The Wakefield MMR Scandal and the Lasting Consequences of Irresponsible Science Journalism

The MMR vaccine scandal, in which the British physician Andrew Wakefield published fraudulent research in The Lancet in 1998 claiming a link between the measles-mumps-rubella vaccine and autism, and in which a substantial portion of the British media amplified and extended this fraudulent claim over more than a decade, is one of the most important and most instructive case studies in the history of science journalism. The consequences of this journalistic failure, which included dramatic declines in MMR vaccination rates in the United Kingdom and other countries, and subsequently increased rates of measles outbreaks in communities with low vaccination coverage, were directly and demonstrably harmful to public health.

The story of the MMR scandal has several distinct phases that illustrate different aspects of science journalism failure. The initial phase was the publication and coverage of Wakefield's 1998 paper, which was treated by many journalists as a significant scientific finding requiring serious coverage despite multiple warning signs about its quality and about Wakefield's undisclosed conflicts of interest. The middle phase was the sustained media amplification of the "controversy," in which journalists framed the question as a genuine scientific debate between experts on one side and concerned parents on the other, rather than as a case of fraudulent science being promoted by a financially conflicted researcher against the overwhelming weight of the evidence. The final phase was the investigative journalism of Brian Deer, whose sustained investigation over more than a decade documented Wakefield's fraud in detail and ultimately led to The Lancet's retraction of the paper and Wakefield's removal from the UK medical register.

The first two phases represent journalism that failed, and understanding why they failed is essential. The failure of the initial coverage reflected insufficient scientific literacy among health journalists, a "balanced reporting" norm that treated a minority scientific position as deserving equal coverage regardless of the quality of the evidence, and the systematic failure to investigate Wakefield's conflicts of interest, which were substantial and would have changed the story significantly had they been disclosed. The sustained amplification of the "controversy" in the middle phase reflected the commercial logic of conflict journalism, in which a dramatic and emotionally resonant story about risks to children generates more reader engagement than a careful evaluation of the evidence showing those risks to be non-existent.

The third phase, Deer's investigative journalism, represents what good science journalism can achieve when it combines scientific rigor, investigative determination, and the institutional support to sustain a long-term investigation against powerful adversaries. Deer's work required a decade of sustained effort, multiple Freedom of Information Act requests, original document analysis, and the willingness to pursue a story in the face of legal threats and professional criticism. The model it provides for Bangladeshi science journalism is aspirational but important: it demonstrates that investigative science journalism can expose fraud that institutional science

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failed to detect, and can do so with consequences that are both scientifically significant and publicly consequential.

In Bangladesh, the risk of an MMR-style amplification of vaccine misinformation by the mainstream media is real and has been periodically realized. During the COVID-19 pandemic, and in previous episodes of vaccine hesitancy related to the polio eradication program and routine childhood immunization, Bangladeshi media organizations have sometimes amplified claims about vaccine risks that were inconsistent with the scientific evidence, either because of insufficient scientific literacy, because of commercial pressures that made engagement with anxious parents more profitable than careful evidence evaluation, or because of political pressures from government actors with their own reasons for managing the public narrative about vaccine programs.

29.3 The Fluoride Controversy in Bangladesh: A Case Study in Contested Science and Journalistic Responsibility

The debate about fluoride in drinking water provides a rich case study in the specific challenges of science journalism in Bangladesh. The scientific evidence on the health effects of fluoride exposure, which has been accumulating since the early twentieth century, is complex, contested in some respects, and politically charged. The established consensus that community water fluoridation at concentrations around 0.7 to 1.0 mg/L reduces dental caries without causing other harm is based on a large body of research, but it has been challenged in recent decades by studies suggesting that higher fluoride concentrations, particularly from natural sources in groundwater, may have neurodevelopmental effects in children.

In Bangladesh, naturally occurring fluoride in groundwater is a specific public health concern in certain regions, particularly parts of Sylhet, Sunamganj, and some coastal districts, where groundwater fluoride concentrations can significantly exceed the WHO guideline value. This is distinct from the controversy about community water fluoridation in wealthy countries: it is a question about managing a natural environmental hazard in areas where groundwater fluoride concentrations are high, not about the wisdom of deliberately adding fluoride to water supplies that are otherwise low in it.

The journalistic coverage of fluoride health effects in Bangladesh has been complicated by several factors. The global controversy about community water fluoridation, which involves a significant component of motivated reasoning and deliberate misinformation by anti-fluoride advocates, has spilled over into media coverage in many countries including Bangladesh in ways that conflate the specific question of high-fluoride groundwater health effects with the more politically charged question of deliberate fluoridation. The scientific literature on fluoride neurotoxicity is genuinely contested, with some studies showing effects at concentrations relevant to Bangladesh's affected areas and others failing to find such effects or finding them only at higher concentrations. And the public health response to the fluoride problem in Bangladesh, including the development of affordable defluoridation technologies and the expansion of surface water sources in affected areas, involves institutional actors with interests in managing the public narrative about the problem.

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The science journalist who covers this issue honestly must navigate between several different forms of potential failure: the failure to report on a genuine public health problem because its association with politically charged global controversies makes it uncomfortable to cover; the failure to distinguish between the specific epidemiological evidence relevant to Bangladesh and the politically motivated global controversy about water fluoridation; and the failure to evaluate the quality of individual studies fairly, whether they support or challenge concern about fluoride health effects. This navigation requires precisely the combination of scientific literacy, critical judgment, and political awareness that sophisticated science journalism demands.

Coda to Part Three: The Internationally Embedded, Locally Committed Science Journalist

Part Three of this textbook has traced the international dimensions of science journalism in Bangladesh through the full range of their complexity: from the global architecture of science communication and its uneven geography to the political economy of international media systems; from the jurisprudence of international human rights law to the comparative legal traditions that provide reference points for Bangladeshi media reform; from the philosophy of epistemic justice and cosmopolitan knowledge to the democratic theory that grounds science journalism's importance for Bangladeshi society; and from the internal conflicts of the internationally oriented journalist to the landmark international cases that illuminate the stakes and the possibilities of the field.

What emerges from this extended analysis is a portrait of science journalism in Bangladesh as a practice that is inescapably embedded in international systems and structures, shaped by global scientific institutions, international legal frameworks, transnational advocacy networks, platform governance regimes, and the political economy of international knowledge production, and simultaneously committed to serving specifically Bangladeshi democratic purposes, Bangladeshi communities, and Bangladeshi public life.

The tension between this international embeddedness and this local commitment is not a problem to be solved but a productive tension to be lived, negotiated, and continuously renegotiated as the international systems change and as Bangladeshi society develops. The science journalist who understands this tension, who can draw on international resources without being captured by international agendas, who can apply international standards without being enslaved to international models, and who can maintain the local commitments that give her work its purpose and its urgency while participating in the global community of science journalism, is the journalist that Bangladesh's situation demands and deserves.

The development of this kind of journalist requires more than technical training, though technical training is essential. It requires the philosophical, historical, legal, and political education that this textbook has been trying to provide. It requires the development of professional communities within Bangladesh in which these deeper dimensions of science journalism practice can be discussed, debated, and developed. It requires institutional support for the conditions under which such journalism can be practiced, including editorial independence, legal protection, and

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economic sustainability. And it requires a culture of democratic commitment within the journalism profession and the broader Bangladeshi society that values truth, accountability, and the right of citizens to the scientific knowledge they need to participate in governing their own lives.

Part Four of this textbook will examine the educational institutions and professional training systems that prepare science journalists in Bangladesh, assessing their current strengths and limitations and developing a vision for the transformations needed to produce the kind of science journalism that this textbook has argued Bangladesh requires. Parts Five through Nine will examine in detail the cross-cutting themes of gender and science journalism, digital transformation, international scientific collaboration, science communication in Bangla, and the future of the profession.

Chapter Notes and Further Reading for Part Three

On the global architecture of science communication, the works of Pierre Bourdieu on the social organization of science, particularly "The Science of Science and Reflexivity" (2004), provide the most rigorous sociological framework available. John Ziman's "Real Science: What It Is, and What It Means" (2000) offers a sophisticated analysis of the changing nature of scientific knowledge production in the era of mode-2 knowledge and the triple helix of university-industry-government relations. The UNESCO reports on open science, particularly the 2021 Recommendation on Open Science and the background papers that accompanied it, provide essential institutional context.

On the political economy of international scientific institutions, Naomi Oreskes and Erik Conway's "Merchants of Doubt" (2010) remains the essential text on the deliberate manufacture of scientific controversy, though it focuses primarily on the American context. Philip Mirowski's "Science-Mart: Privatizing American Science" (2011) provides a more systemic analysis of the commercialization of scientific research that is relevant to understanding the international scientific economy. Sheila Jasanoff's comparative studies of regulatory science in the United States, United Kingdom, and Germany, collected in "Designs on Nature: Science and Democracy in Europe and the United States" (2005), provide essential comparative material on how different institutional contexts produce different forms of scientific knowledge.

On international human rights law and science journalism, the General Comments of the UN Human Rights Committee, particularly General Comment No. 34 on Article 19 of the ICCPR, are essential primary sources. Frank La Rue's 2011 report to the UN Human Rights Council on freedom of expression and the internet provides important guidance on the application of freedom of expression principles to the digital context. The 2020 General Comment of the UN Committee on Economic, Social and Cultural Rights on Article 15, on the right to science, is the most important recent development in the right to science jurisprudence.

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On the philosophy of epistemic justice and cosmopolitan knowledge, Miranda Fricker's "Epistemic Injustice: Power and the Ethics of Knowing" (2007) is the foundational text. Boaventura de Sousa Santos's "Epistemologies of the South" (2014) provides the most comprehensive postcolonial rethinking of the epistemological foundations of social science, with direct implications for science journalism. Kwame Anthony Appiah's "Cosmopolitanism: Ethics in a World of Strangers" (2006) offers the most accessible and most practically useful account of cosmopolitan philosophy as a guide to cross-cultural engagement.

On democratic theory and the public sphere, Jurgen Habermas's "The Structural Transformation of the Public Sphere" (1962, translated 1989) and "Between Facts and Norms" (1996) provide the foundational philosophical framework. Nancy Fraser's critique of Habermas, particularly her "Rethinking the Public Sphere" (1990), provides important correctives that address the exclusions and power asymmetries that Habermas's original account tended to understate. Chantal Mouffe's "The Democratic Paradox" (2000) offers an important alternative to Habermas's deliberative model that takes more seriously the agonistic dimensions of democratic politics.

On the specific cases discussed in this part, Brian Deer's investigative journalism on Andrew Wakefield and the MMR scandal is collected and documented on his website at briandeer.com and provides an extraordinary case study in the practice of investigative science journalism. Naomi Oreskes's "Why Trust Science?" (2019) provides a direct philosophical response to science skepticism that is directly applicable to the Bangladeshi context. The Covering Climate Now consortium's annual journalism awards provide an ongoing record of the best international climate journalism, including the work of Bangladeshi climate journalists who have been recognized by the program.

This concludes Part Three of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge." Part Four will examine educational institutions and professional training systems for science journalism in Bangladesh.

PART FOUR: EDUCATIONAL INSTITUTIONS, PROFESSIONAL TRAINING, AND THE FORMATION OF THE SCIENCE JOURNALIST IN BANGLADESH

Pedagogy, Power, and the Crisis of Professional Knowledge

A Note on the Architecture of Part Four

Part Three of this textbook established that Bangladeshi science journalism operates within a vast and complex international architecture of knowledge, power, and institutional interest. Part

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Four descends from that international architecture into the more specific and in some ways more intimate territory of how science journalists are actually formed: the universities and training programs that teach them, the professional associations that try to shape their norms, the newsroom cultures that complete their education, and the ongoing intellectual and ethical development that the most serious practitioners pursue throughout their careers.

The central argument of Part Four is that the current system of journalism education in Bangladesh is fundamentally inadequate to the demands of science journalism as this textbook has defined it, and that this inadequacy is not primarily a matter of insufficient resources or outdated technology, though both of these are real problems. The deeper inadequacy is conceptual and philosophical: journalism education in Bangladesh has not yet fully developed a theory of what science journalism is for, what kind of person it requires, and what kind of educational formation that person needs. The reforms that would genuinely transform science journalism education in Bangladesh are therefore not primarily technical reforms but intellectual and philosophical ones, though they have technical dimensions that are equally important.

This argument will be developed through nine chapters that examine the current institutional landscape of journalism education, the theoretical frameworks available for thinking about journalism pedagogy, the specific demands of science journalism education that distinguish it from general journalism training, the controversies within and around journalism education in Bangladesh, the comparative international models that offer both inspiration and cautionary tales, and the specific institutional reforms that would constitute genuine progress toward a system of journalism education adequate to the demands of Bangladeshi democracy.

Chapter Thirty: The Current Landscape of Journalism Education in Bangladesh

30.1 The Institutional Map: From the University of Dhaka to the Private Proliferation

The formal institutional landscape of journalism education in Bangladesh has expanded dramatically over the past two decades. As of 2025, at least twenty universities, including ten public institutions and ten or more private ones, offer programs in journalism, mass communication, or media studies at the undergraduate or postgraduate level. This represents a remarkable growth from the essentially single-institution system that existed before the expansion of private university education in the 1990s, when the Department of Mass Communication and Journalism at the University of Dhaka was effectively the only significant institutional provider of journalism education in the country.

The flagship institution of journalism education in Bangladesh remains the Department of Mass Communication and Journalism at the University of Dhaka, which has been educating journalists since 1962. The Department's history is inseparable from the political history of Bangladesh: it was established in the final years of Pakistani rule as part of a broader effort to develop the institutional infrastructure of an emerging educated middle class in East Pakistan, and it has since trained several generations of journalists who have occupied many of the most important

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positions in the Bangladeshi media. Its faculty has included some of the most distinguished scholars of communication and journalism in Bangladesh, and its alumni include editors, correspondents, and media executives who have shaped the character of Bangladeshi journalism across half a century.

But the Department of Mass Communication and Journalism at Dhaka University has also been the subject of persistent criticism, from its own alumni, from working journalists, from international observers, and from within the academic community itself. The core of this criticism is that the Department's curriculum, which was developed primarily in the 1960s and 1970s and has been only partially updated in subsequent decades, prepares students primarily for a model of journalism that no longer exists: the large, bureaucratically organized print newsroom of the developmental state period, covering official events and relaying official messages to a passive public. It does not adequately prepare students for the analytical, investigative, data-driven, digitally fluent, and scientifically literate journalism that the contemporary media environment and the contemporary democratic situation in Bangladesh demand.

The curriculum of the Dhaka University journalism department, as it currently exists, includes courses on the history and development of mass media in Bangladesh, journalistic writing skills in both Bangla and English, media law and ethics, communications theory, media economics, and development communication. These are legitimate components of any serious journalism education. But a survey of the curriculum reveals significant absences that are directly relevant to science journalism: there is no systematic course in scientific literacy or science communication, no course in statistical reasoning and data interpretation, no sustained engagement with the sociology and philosophy of science, and no specialized training in any of the domain areas, health, environment, agriculture, technology, that constitute the primary concerns of science journalism in Bangladesh.

The private universities that have entered the journalism education market since the 1990s have, with some exceptions, followed the Dhaka University template while reducing its content to fit the lower resource and contact-time constraints of private university education. The University of Liberal Arts Bangladesh (ULAB) has been a notable exception: its Department of Media Studies and Journalism has developed a curriculum that engages more seriously with digital media, critical theory, and interdisciplinary approaches to journalism education, and it has attracted international faculty and developed international partnerships that have exposed its students to a broader range of perspectives than is available at most Bangladeshi journalism programs.

The Bangladesh University of Professionals (BUP), which offers a journalism program within its Faculty of Security and Strategic Studies, represents a different kind of institutional context: a university with strong military associations whose journalism curriculum naturally reflects the specific concerns of that institutional culture, including national security, strategic communication, and information operations. The presence of a military-affiliated institution in the journalism education landscape raises questions about the values that journalism programs should inculcate and the institutional interests that shape their curricula, questions that are

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particularly pertinent in a country where the relationship between the military and the press has historically been fraught.

30.2 The Structural Problems of Journalism Education: Theory-Practice Divides and Resource Constraints

The most consistently documented structural problem in Bangladeshi journalism education is the gap between theoretical teaching and practical training. The report of the Media Reform Commission submitted to Chief Adviser Muhammad Yunus on March 22, 2025, identified this gap as one of the primary weaknesses of the journalism education system and recommended specific reforms to address it. Kamal Ahmed, the Commission's chief and a veteran journalist of considerable distinction, explicitly emphasized that journalism education needed to be restructured to produce graduates capable of independent, investigative, evidence-based reporting rather than graduates skilled primarily in the conventions of event-based, officially-sourced reporting.

The theory-practice gap in Bangladeshi journalism education manifests in several specific ways. The first is the mismatch between the analytical and conceptual frameworks taught in journalism courses and the practical skills required to apply those frameworks in actual reporting situations. A student who has learned, in the abstract, that journalists should seek independent expert verification of scientific claims may never have been given a practical exercise in which she has to identify an appropriate independent expert, make contact with a scientist who does not want to speak to a journalist, evaluate the quality of the expert's credentials and independence, and incorporate the resulting information into a story under deadline pressure. The theory is present in the curriculum; the practical training to apply it is not.

The second manifestation of the gap is the lack of integration between journalism education and the scientific disciplines that are most relevant to science journalism. A student who wants to specialize in health journalism in Bangladesh has no institutional pathway for combining systematic training in public health and epidemiology with systematic training in journalism. She can study journalism at one institution and, separately, try to develop her scientific knowledge through self-education or through attending public lectures and workshops. But the formal educational system does not provide the integrated dual training in science and journalism that the best international science journalism education programs offer.

The third manifestation is the inadequacy of the practical facilities and experiences through which journalism students develop their skills. Journalism learning requires practice: it requires the experience of going into the field, interviewing sources, handling the complexity and uncertainty of real reporting situations, making editorial judgments under time pressure, and receiving detailed feedback on the quality of the resulting work. The equipment, supervision, and organizational relationships needed to provide this kind of practical experience are expensive, and most Bangladeshi journalism programs do not have the resources to provide it systematically.

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The resource constraint problem in journalism education is real and serious, but it is not the whole story. Some of the most important reforms to journalism education do not require additional resources but rather different allocation of existing resources, and a different intellectual framework for deciding what should be taught and how. The development of a genuine science journalism specialization does not require an entirely new curriculum: it requires the integration of science literacy training, data skills, and domain-specific scientific knowledge into a curriculum that currently lacks these elements. This integration requires intellectual and organizational effort more than financial investment.

30.3 The National Institute of Mass Communication and Its Paradoxes

The National Institute of Mass Communication (NIMC), established in 1980 under the Ministry of Information, is the primary state institution for continuing professional education in journalism in Bangladesh. The NIMC's mandate includes training of journalists and broadcasting professionals, research on communication issues, and the development of educational materials for the journalism profession. It has trained many thousands of journalists over its four-and-a-half decades of existence and has played an important role in the technical professionalization of the Bangladeshi journalism workforce.

But the NIMC's relationship to the state creates fundamental tensions that have persistently limited its capacity to support genuine journalistic independence and critical thinking. An institution funded by and answerable to the Ministry of Information is structurally compromised in its ability to train journalists to challenge official information, investigate government agencies, and exercise the critical independence that journalism requires. Under the Hasina government, this structural compromise was particularly acute: the NIMC's training programs were subject to the same political pressures that shaped the rest of the official media infrastructure, and its capacity to train journalists in the critical and investigative traditions was correspondingly limited.

The reform of the NIMC is one of the most important and most neglected items on the media reform agenda that emerged from the post-August 2024 political transition. The Media Reform Commission's report, submitted in March 2025, addressed the NIMC's status as part of a broader discussion of the institutional framework for journalism education and training, but the specific recommendations for NIMC reform were less developed than those for other dimensions of the media landscape. The fundamental question of whether the NIMC should remain within the Ministry of Information or be constituted as an independent institution with its own governance structure, analogous to the BBC-funded Reuters Institute for the Study of Journalism at Oxford or the independently governed journalism training organizations in several European countries, was not definitively resolved in the Commission's report.

The argument for institutional independence is compelling on both theoretical and practical grounds. Theoretically, the philosophical tradition of academic freedom, which holds that educational and research institutions must be free from government control to perform their functions of critical inquiry and knowledge creation, applies with particular force to an institution whose specific mandate is to train journalists in the skills and values of independent,

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accountable reporting. An NIMC that is subject to ministerial direction and budgetary control is not structurally capable of genuinely independent journalism training, no matter how talented and committed its individual staff members may be.

Practically, the experience of journalism training organizations in countries where government-affiliated training institutions have been transformed into independent bodies, including in several Central and Eastern European countries after 1989 and in several African countries after democratic transitions, suggests that institutional independence produces genuine improvements in training quality, particularly in the areas of investigative journalism, press freedom advocacy, and science and environmental reporting where the political sensitivity of the content creates the greatest pressures on state-affiliated institutions.

Chapter Thirty-One: Theoretical Frameworks for Journalism Education

31.1 Liberal Education, Professional Training, and the Debate Over Journalism's Intellectual Foundations

The debate over the proper intellectual foundations of journalism education is one of the oldest and most persistent in the academic and professional discourse on journalism. It takes several forms, but the most fundamental is the question of whether journalism education should be primarily a professional training in skills and techniques, or primarily a liberal education in the intellectual and ethical formation of the journalist as a democratic citizen and social actor.

The professional training model, which is dominant in American journalism education and increasingly influential in other countries including Bangladesh, treats journalism as a craft that can be taught through the transmission of specific skills: news writing, interviewing, source development, fact-checking, data analysis, and increasingly digital production. This model has the advantage of producing graduates who are immediately employable and who can perform the basic technical functions of journalism from the outset of their careers. It has the disadvantage of potentially producing journalists who are technically proficient but intellectually under-equipped for the most demanding and most important aspects of their vocation: the exercise of judgment in complex and contested situations, the capacity for sustained critical engagement with powerful institutions, and the intellectual courage to pursue stories that challenge official consensus.

The liberal education model, which has more influence in European journalism education traditions and in some elite American institutions, treats journalism education as part of a broader formation in the humanities, social sciences, and natural sciences that develops intellectual breadth, critical reasoning, and civic commitment alongside the specific technical skills of the profession. This model produces journalists who may take longer to become technically proficient but who have deeper resources for the exercise of judgment, for independent analysis, and for the kind of sustained intellectual engagement with complex issues that the most important journalism requires.

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For science journalism specifically, the argument for a liberal education foundation is particularly strong. The science journalist who has a thorough grounding in the philosophy and history of science, in the sociology of scientific institutions, in statistical reasoning and quantitative literacy, in at least one scientific domain at a level that goes beyond popular science, and in the political philosophy of democratic governance and public deliberation is dramatically better equipped for her profession than one who has learned the techniques of news writing and source development without this intellectual foundation. The technical skills of journalism can be developed relatively quickly through practice; the intellectual formation required for sophisticated science journalism takes years of serious engagement.

The tension between these two models, however, is often framed in a way that misrepresents the actual choices available. The false dichotomy is between pure professional training (skill without thought) and pure liberal education (thought without skill). The most successful journalism education programs combine both dimensions: they develop technical proficiency through systematic practical training while simultaneously building the intellectual and ethical foundation through rigorous engagement with the disciplines that are most relevant to journalism. This combined approach requires more time, more resources, and more intellectual ambition than either pure model, but it is the approach most likely to produce the science journalists that Bangladesh needs.

31.2 John Dewey, Progressive Education, and the Science Journalist as Democratic Actor

The educational philosophy of John Dewey, which has had an enormous influence on progressive education globally but whose specific implications for journalism education have been insufficiently explored, provides one of the most powerful theoretical frameworks available for thinking about what science journalism education should try to achieve. Dewey's pragmatist philosophy of education, developed in works including "Democracy and Education" (1916), "Experience and Education" (1938), and the essays collected in "The Child and the Curriculum" (1902), argues that education is not the transmission of fixed knowledge from teacher to student but the cultivation of the capacity for reflective inquiry: the development of habits of mind and practice that enable individuals to address novel problems intelligently and to participate effectively in the collective life of a democratic society.

For Dewey, the central educational question is not "what knowledge should students acquire?" but "what kinds of experience, thinking, and practice will develop the capacities that students need for effective democratic life?" This question, translated into the context of science journalism education, yields a specific and demanding educational program. The science journalism student needs experiences, not just information, that develop her capacity to assess the quality of scientific evidence independently and rigorously. She needs practice, not just instruction, in the complex social skills of source identification, interview, and verification. She needs immersion in the specific domains of scientific knowledge that are most relevant to her anticipated work, not superficial acquaintance. And she needs sustained engagement with the ethical and political dimensions of her practice, not a single course in media ethics that presents dilemmas abstractly without connecting them to the specific institutional contexts and political pressures within which they will actually be encountered.

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Dewey's concept of "learning by doing," which has sometimes been reduced to a merely practical slogan about the importance of hands-on experience, has a deeper epistemological meaning that is directly relevant to science journalism education. For Dewey, the dichotomy between theory and practice is a false one: genuine understanding is always both theoretical and practical, involving both the articulation of principles and the testing of those principles in specific situations. The science journalism student who has articulated the principle that journalists should seek independent expert verification of scientific claims but has never had the experience of actually pursuing and conducting that verification in a real reporting situation does not genuinely understand the principle: she understands its verbal formulation but not the practical wisdom required to apply it.

This Deweyan insight has specific implications for the design of science journalism education in Bangladesh. It suggests that the integration of practical reporting experience into the curriculum should not be an afterthought, a period of work experience or internship added to a primarily theoretical program, but a central organizing principle of the entire educational experience. Students should be reporting on scientific issues from early in their education, learning from the experience of real reporting challenges rather than from hypothetical case studies, and bringing their practical experiences back into the theoretical classroom in a continuous cycle of practice and reflection.

31.3 Paolo Freire's Pedagogy of the Oppressed and Its Application to Science Journalism Education in Bangladesh

Paulo Freire's "Pedagogy of the Oppressed" (1968) is one of the most influential works in the history of educational philosophy, and its central concepts, the "banking model" of education, the distinction between "naive consciousness" and "critical consciousness," and the method of "problem-posing education," have specific and important applications to the project of science journalism education in Bangladesh that are rarely explicitly acknowledged in discussions of journalism pedagogy.

Freire's "banking model" of education describes a pedagogical approach in which the teacher deposits knowledge into students as if they were empty receptacles, treating them as passive recipients of information rather than active agents of their own learning and understanding. This model, Freire argued, is not merely pedagogically inefficient but politically oppressive: it reproduces the social conditions of passivity, dependence, and deference to authority that characterize unjust social structures, and it prevents students from developing the critical consciousness necessary to understand and challenge those structures.

The banking model of journalism education is, unfortunately, dominant in many Bangladeshi journalism programs. The lecture-based transmission of journalistic conventions, media law provisions, and communication theories to passive students sitting in auditoriums produces graduates who have absorbed a body of information about journalism without developing the critical intellectual capacity to apply that information intelligently to the complex, contested, and politically charged situations they will encounter in practice. They know, in the abstract, that journalism should be independent and critical of power; they have not developed, through any

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systematic educational experience, the practical intellectual and professional capacity to be independent and critical in the specific institutional, political, and economic contexts they will actually face.

Freire's alternative, "problem-posing education," starts from the concrete reality of the learner's situation and develops critical understanding through reflection on that reality. Applied to science journalism education in Bangladesh, problem-posing education would start not from the abstract transmission of journalistic principles but from the concrete reality of what science journalism in Bangladesh actually encounters: the political pressures, the institutional resistances, the scientific uncertainties, the legal risks, and the ethical dilemmas that constitute the actual practice of the profession. Students would engage with these realities through the analysis of actual cases from Bangladeshi science journalism history, through supervised practice reporting on real scientific issues, and through systematic reflection on what they are learning from that practice.

The concept of "generative themes" in Freire's pedagogy is particularly interesting in this context. Freire argued that adult education should organize itself around the "generative themes" that are most central to the lived experience and the felt concerns of the learner community, because these are the themes that generate the emotional engagement and the personal investment necessary for genuine learning. For Bangladeshi science journalism students, the generative themes might include climate change and its effects on their families and communities, the quality and safety of the food they eat, the environmental conditions of the cities where they study and work, and the political uses of scientific authority in the public life of their country. These themes, which are simultaneously personal and political, technical and ethical, local and global, are the natural organizing principles of a science journalism curriculum that takes the Freirean insight seriously.

31.4 Antonio Gramsci's Concept of the Organic Intellectual and the Science Journalist's Role

Antonio Gramsci's concept of the "organic intellectual," developed in his "Prison Notebooks" (written between 1929 and 1935, published posthumously), describes an intellectual whose work is organically connected to and serves the interests of a specific social class or social group, in contrast to the "traditional intellectual" whose apparent independence from class interest conceals an actual connection to the dominant class. Gramsci's concept has been widely applied in thinking about the role of journalism in society, and it has specific implications for how science journalism in Bangladesh should understand its social function.

The science journalist as organic intellectual, in the Gramscian sense, is one who uses her scientific and communicative skills in the service of the communities most affected by the scientific and technological changes she covers: the farmers whose livelihoods are threatened by climate change and agricultural transformation, the workers whose health is damaged by industrial pollution, the patients who are exploited by the pharmaceutical industry, and the citizens whose rights are violated by digital surveillance. This understanding of the journalist's social function differs from both the liberal professional model, in which the journalist serves an

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abstract "public" that transcends class and social interest, and from the state-controlled model, in which the journalist serves the interests of the government.

The tensions within the Gramscian framework as applied to journalism are real and important. The commitment to serving specific marginalized communities can conflict with the commitment to the epistemic neutrality and evidential rigor that journalism requires: a journalist who is organically committed to the interests of landless farmers may have difficulty reporting accurately on scientific findings that challenge the specific claims of the farming advocacy organizations that speak on those farmers' behalf. A journalist who is organically committed to the communities affected by pharmaceutical corruption may have difficulty maintaining the critical distance from those communities' narratives that accurate reporting requires.

The resolution of these tensions is not a retreat to a mythical journalistic neutrality that serves everyone equally and no one in particular, but rather a richer understanding of what serving the interests of marginalized communities actually requires. Marginalized communities are not served by journalism that simply amplifies their advocates' claims without critical evaluation: they are served by journalism that provides them with the most accurate, most complete, and most contextually sophisticated account of the issues that affect them that can be produced. The organic intellectual's commitment is to truth in the service of justice, not to advocacy in the name of truth.

Chapter Thirty-Two: The Specific Demands of Science Journalism Education

32.1 Scientific Literacy as a Core Competency: What It Means and Why It Is Absent

The term "scientific literacy" is used loosely in discussions of education and journalism training, and it is worth specifying more precisely what it means in the context of science journalism education and why its absence from most Bangladeshi journalism programs constitutes a fundamental educational failure.

Scientific literacy, as used in the context of science journalism, does not mean a comprehensive scientific education: it does not require the science journalist to have the knowledge of a trained scientist in any specific field. What it does require is a set of cognitive and methodological dispositions and capacities that enable the journalist to engage intelligently with scientific information, to evaluate the quality of evidence, to understand the conventions of scientific communication, and to recognize the social and institutional dimensions of scientific knowledge production.

The first component of scientific literacy is quantitative reasoning: the ability to understand and critically evaluate numerical and statistical claims. This includes understanding concepts like statistical significance, confidence intervals, effect sizes, and the distinction between relative and absolute risk, all of which appear regularly in the scientific literature that science journalists report on and all of which are sources of systematic misunderstanding and misrepresentation in

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science journalism worldwide. A journalist who does not understand that a "statistically significant" result can still represent a clinically trivial effect, or that a "doubling of risk" can mean moving from a 0.1 percent to a 0.2 percent probability, is vulnerable to systematic misreporting of health and environmental risks in ways that either alarm or falsely reassure her readers.

The second component is methodological literacy: the ability to understand the major research designs used in different scientific fields and to evaluate their strengths and limitations. Randomized controlled trials, observational epidemiological studies, case-control studies, systematic reviews and meta-analyses, field experiments in agricultural science, climate modeling studies, and toxicological animal studies all have different designs, different inferential limitations, and different vulnerability to specific forms of bias and error. The science journalist who understands these methodological distinctions can make much more accurate and useful judgments about the significance and limitations of individual research findings than one who treats all peer-reviewed research as equivalent.

The third component is institutional literacy: the ability to understand the social organization of scientific research, including the peer review system, the role of funding sources in shaping research agendas and findings, the conventions of scientific communication, and the mechanisms through which scientific consensus is formed and challenged. This institutional literacy is necessary for understanding why some scientific controversies are genuine (reflecting real evidential uncertainty) and others are manufactured (reflecting the strategic deployment of uncertainty by interests that benefit from delayed action), a distinction that is central to the science journalist's responsibility in covering climate change, tobacco, pharmaceuticals, and other domains where corporate interests have systematically sought to create public doubt about settled science.

The fourth component is domain knowledge: a basic understanding of the specific scientific domains that are most relevant to Bangladesh's situation, including public health epidemiology, climate science, agricultural science, environmental toxicology, and the technical dimensions of digital platforms and artificial intelligence. This domain knowledge needs to go beyond the level of popular science to include the key findings, the major debates, the most important methodological issues, and the institutional landscape of each domain. This is a demanding educational requirement, but it is a genuine requirement: the science journalist who covers dengue epidemiology without understanding the basics of epidemiological method, or who covers climate projections without understanding the basics of climate modeling, is not equipped to provide her readers with an accurate and useful account of the issues she is covering.

Currently, the journalism education system in Bangladesh provides students with essentially no systematic training in any of these four components of scientific literacy. The quantitative reasoning deficit is particularly severe: most Bangladeshi journalism students have had no statistical training beyond what they received in secondary school, which in most cases is minimal and not oriented toward the kinds of reasoning that science journalism requires. The methodological literacy gap is also very large: the research methods course that appears in some

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journalism curricula typically focuses on social science research methods for journalism research itself, not on the evaluation of scientific research that journalists cover.

32.2 Data Journalism as a Science Journalism Competency: Current Gaps and Required Training

Data journalism, which was briefly introduced in Chapter Fifteen of Part Two, deserves extended treatment in the educational context because it represents one of the most important competencies for the future of science journalism in Bangladesh and one of the most significant current gaps in journalism education.

The practice of data journalism requires a cluster of skills that are largely absent from current Bangladeshi journalism curricula: facility with spreadsheet software for basic data analysis, knowledge of database querying languages for working with structured government and institutional data, familiarity with programming languages for data analysis and visualization such as Python and R at a basic level, competency with geographic information systems for mapping and spatial analysis, and the ability to use web scraping tools for collecting data from digital sources that are not available in organized downloadable format.

These technical skills are necessary but not sufficient: they need to be combined with the substantive scientific and statistical literacy discussed above, with an understanding of the specific data sources most relevant to science journalism in Bangladesh, and with the editorial and communicative skills to translate data analysis into compelling and accessible journalism. The integration of these multiple dimensions of data journalism competency into a coherent educational program is one of the most demanding curricular design challenges in contemporary journalism education globally.

Several international journalism schools have developed innovative approaches to data journalism education that offer models worth examining for their adaptability to the Bangladeshi context. The computational journalism program at Georgia Tech combines computer science, journalism, and public policy in a curriculum that requires students to develop genuine technical competency in data analysis while simultaneously developing the journalistic and civic judgment to use that competency effectively. The data journalism program at the Columbia Journalism School has pioneered a studio-based learning model in which students develop data skills through the production of actual journalism projects rather than through abstract technical exercises. The investigative journalism programs at the Universities of Amsterdam and Copenhagen have developed systematic curricula for teaching document analysis, data mining, and digital investigation methods in the context of investigative reporting that have produced internationally recognized investigations of public interest.

None of these models can be directly transplanted to Bangladesh, for reasons that Part Three discussed: the institutional context, the resource constraints, and the specific scientific and civic priorities of Bangladesh are all different from those that shaped these programs. But the intellectual frameworks and pedagogical approaches they embody, learning through doing, integration of technical and editorial skills, organization around actual journalism projects rather

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than abstract exercises, and connection to specific civic and scientific problems of local significance, are genuinely transferable.

The specific data sources most relevant to data journalism in the science domains that matter most for Bangladesh deserve some discussion in the educational context. Government administrative data, including health facility records, disease surveillance reports, environmental monitoring data, agricultural production statistics, and climate observation records, represent the most important potential sources for data-driven science journalism in Bangladesh. These sources are partially accessible through the Right to Information Act, partially available through the open data initiatives that several government agencies have developed in recent years, and partially obtainable through investigative techniques including information requests, court proceedings, and the development of sources within government agencies.

The Bangladesh Bureau of Statistics produces a range of national data sets that are directly relevant to science journalism, including health and demographic data from the national surveys, agricultural data from the agricultural census and monitoring systems, and environmental data from various monitoring programs. The quality, completeness, and accessibility of these data sets varies considerably, and the data journalist needs to understand both the potential value of these sources and their specific limitations and biases, which were discussed in Chapter Fifteen.

32.3 Science Communication Theory and Its Pedagogical Implications

The academic field of science communication, which has developed since the 1980s as an interdisciplinary field connecting sociology, psychology, communication studies, and the history and philosophy of science, has produced a substantial body of theoretical and empirical work on how scientific information is communicated to and received by non-specialist audiences. This work, which was briefly introduced in Chapter One of Part One through the discussion of the transmission model, the deficit model, and the contextual model of science communication, has direct implications for how science journalism should be taught that are not yet adequately reflected in Bangladeshi journalism curricula.

The most important practical implication of the science communication literature for journalism education is that the audience for science journalism is not a homogeneous mass of ignorant citizens waiting to be educated, but a diverse collection of people with different levels of prior knowledge, different cultural and community contexts, different values and priorities, and different reasons for caring about scientific information. The evidence from decades of research on public understanding of science consistently shows that providing people with more scientific information does not automatically produce more scientifically informed attitudes or behaviors: the reception of scientific information is always mediated by trust, values, cultural identity, and prior experience with scientific and government institutions.

The science communication literature on risk perception is particularly important for the education of health and environmental journalists. The psychological research of Paul Slovic, Baruch Fischhoff, and their colleagues has documented that people's judgments about risk are shaped by factors other than objective probability and magnitude: the controllability of the risk,

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its familiarity, its dread quality, the visibility of the potential victims, and the extent to which the risk is perceived as voluntarily assumed or externally imposed all influence how people perceive and respond to risk information. The science journalist who understands these psychological factors is better equipped to communicate risk information in ways that are both accurate and effective: that convey the relevant scientific information without either inducing irrational terror or dismissing genuine concerns.

The research on "motivated reasoning," developed primarily by Jonathan Haidt in his work on moral psychology and by Dan Kahan in his work on cultural cognition, has shown that people's evaluation of scientific evidence is often driven by their prior values and cultural affiliations rather than by open-minded assessment of the evidence. This finding, while sometimes used to justify a kind of despairing relativism about the possibility of evidence-based public deliberation, actually points toward specific strategies for more effective science communication: strategies that acknowledge the values at stake in scientific controversies, that present scientific information in ways that are consistent with the values of the audience rather than threatening to them, and that engage with the cultural and community contexts within which scientific information is received and interpreted.

For Bangladeshi science journalism education, the science communication literature suggests several specific pedagogical priorities. First, students should develop an understanding of the diverse audiences for science journalism in Bangladesh, including the specific characteristics of rural and urban audiences, educated and less-educated audiences, and audiences with different religious, cultural, and political backgrounds. Second, students should develop the communication skills to adapt their science journalism to different audience contexts without compromising accuracy or depth. Third, students should develop an understanding of the psychological and social dynamics that shape how scientific information is received and used, including the role of trust in scientific institutions, the influence of cultural identity on risk perception, and the mechanisms of motivated reasoning. And fourth, students should develop the ethical commitment to communicate scientific complexity honestly rather than simplifying it in ways that serve editorial convenience at the expense of accuracy.

Chapter Thirty-Three: The Newsroom as Educational Institution

33.1 Informal Learning and the Reproduction of Journalistic Culture

The formal educational institutions that produce journalism graduates are only one component of the system through which science journalists are formed. The newsroom itself, through the informal processes of mentorship, editorial feedback, peer learning, and the daily experience of professional practice, is a powerful educational institution that shapes the professional identity, the practices, and the values of journalists in ways that can either reinforce or undermine the formation that formal education provides.

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The educational culture of Bangladeshi newsrooms is, in most cases, significantly less supportive of the kind of science journalism that this textbook has been arguing for than it should be. The dominant newsroom culture in most Bangladeshi media organizations values speed over accuracy, quantity over depth, official sourcing over independent verification, and the avoidance of controversial stories over the pursuit of important truths. These values are not the personal preferences of individual journalists or editors: they are structural responses to the incentive systems that the political economy of the Bangladeshi media creates. A journalist who produces twenty short, officially-sourced stories per day is producing what the system rewards; a journalist who spends three weeks developing a single investigative story on pharmaceutical corruption is a management problem.

The sociological concept of "occupational socialization," developed by scholars including Michael Schudson, Herbert Gans, and Gaye Tuchman in their classic studies of newsroom culture, describes the process through which journalists learn, through their daily practice and through the feedback they receive from editors and peers, what journalism "is" and how it is properly done. This occupational socialization is enormously powerful, and it can override the values and practices that journalism education instills. The journalist who has been educated to value investigative independence and scientific rigor but who works in a newsroom that rewards none of these qualities faces a difficult choice between her professional education and her professional survival.

The implications for journalism education are significant. Educational institutions cannot simply ignore the newsroom cultures into which their graduates will enter and hope that the values instilled in education will survive the encounter with the real institutional pressures of professional practice. They need to prepare students specifically for the challenges of maintaining good journalistic values in difficult institutional contexts: to develop the professional resilience, the understanding of institutional pressures, and the strategic intelligence to find ways of doing good work within constrained environments rather than either capitulating to institutional pressures or burning out in futile resistance to them.

33.2 The Crisis of Mentorship and the Collapse of Experienced Science Journalism Capacity

One of the most serious consequences of the systematic destruction of journalism capacity during the Hasina government period, and of the continuing instability of the post-August 2024 period, is the collapse of the mentorship networks through which experienced science journalists transmit their knowledge, skills, and professional values to the next generation of practitioners. The Transparency International Bangladesh report of August 2025, which documented that 496 journalists were subjected to harassment in a single year following August 2024, with nearly half facing murder charges and at least 150 losing their jobs, describes not just individual tragedies but the systematic disruption of the professional knowledge networks through which science journalism capacity is reproduced.

The journalists who were forced out of newsrooms in this period were disproportionately the experienced practitioners who had developed the scientific literacy, the source networks, the

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investigative skills, and the editorial judgment that science journalism requires. Their departure from the profession represents a loss of institutional knowledge and mentorship capacity that cannot be quickly replaced through formal education. The development of science journalism as a serious professional field requires not just the training of new practitioners but the preservation and transmission of the knowledge that experienced practitioners have accumulated through years of professional practice.

The implications for journalism education are direct: journalism education institutions need to find ways of connecting students not just with faculty but with experienced practitioners who can provide the kind of mentorship and real-world knowledge transfer that formal education cannot provide. Internship programs, journalist-in-residence programs, and collaborative journalism projects that bring students into working relationships with experienced practitioners are all mechanisms that can support this connection. But they require the existence of experienced practitioners willing and able to mentor, which in the current Bangladeshi journalism environment is a significantly constrained resource.

33.3 The Role of Editorial Culture in Supporting or Undermining Science Journalism

The editorial culture of specific media organizations, their internal norms about what constitutes good journalism, what kinds of stories are worth pursuing, how sources should be treated, and how scientific uncertainty should be communicated, shapes the practical possibilities for science journalism in ways that are as important as the formal educational preparation of individual journalists. The most scientifically literate, the most rigorously trained, and the most ethically committed science journalist working in a newsroom whose editorial culture does not value these qualities will find it extremely difficult to practice science journalism at the level her formation would otherwise enable.

The development of editorial cultures supportive of quality science journalism is therefore an educational and institutional project as much as a personal one. Editors and news managers need to be educated in the specific demands of science journalism: in what it means for a story to be scientifically accurate, in how to evaluate the quality of a science journalist's sourcing and verification, in how to handle editorial disputes about scientific uncertainty, and in how to protect science journalists from the legal and institutional pressures that can arise from challenging coverage. An editor who has no scientific literacy and no understanding of the specific professional demands of science journalism is not equipped to support it, even with the best of intentions.

The Media Reform Commission's 2025 report recommended specific investments in professional development for editors and news managers, alongside the training programs for journalists themselves. This recommendation reflects an understanding that the development of quality journalism requires systemic change in newsroom culture, not just individual training. The implementation of this recommendation, which as of early 2026 remained largely aspirational, would represent an important step toward creating the institutional conditions in which quality science journalism becomes possible.

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Chapter Thirty-Four: Controversies in Journalism Education

34.1 The Accreditation Controversy: Who Should Determine What Counts as Journalism Education?

The question of who should accredit journalism education programs, and against what standards, is one of the most contested issues in the governance of journalism education in Bangladesh, with implications that go well beyond the administrative question of program quality assurance. The University Grants Commission (UGC), which is the statutory body responsible for regulating higher education in Bangladesh, has the formal authority to accredit and regulate journalism programs at universities. But the UGC's approach to journalism program regulation has been primarily procedural, focusing on input measures such as faculty qualifications and library holdings, rather than on the substantive quality of journalism education as assessed against professional standards.

The argument for a more substantive accreditation system, one that assesses journalism programs against standards of professional competence and journalistic quality rather than merely academic compliance, has been made by several journalism professional organizations and journalism educators in Bangladesh. The Journalism Teachers' Association and the Communication and Journalism Educators' Network Bangladesh (CJENBD) have both engaged with questions of journalism education quality, though their capacity to influence accreditation standards is limited by the UGC's statutory primacy.

The controversy about accreditation has a specific dimension relevant to science journalism: should the standards for journalism program accreditation include specific requirements for science literacy training, data journalism competency, and domain knowledge in the scientific fields most relevant to Bangladesh? The argument for such requirements is that they would create institutional incentives for journalism programs to develop the science journalism competencies they currently lack. The argument against is that accreditation standards risk becoming bureaucratic compliance exercises that squeeze out educational innovation and diversity in favor of standardized templates.

The comparison with journalism accreditation in the United States, where the Accrediting Council on Education in Journalism and Mass Communications (ACEJMC) sets standards that include requirements for knowledge in mathematics and statistics, is instructive. The ACEJMC's standards, while imperfect and sometimes criticized for their bureaucratic formalism, have created institutional incentives for American journalism programs to include quantitative literacy training that most programs would otherwise lack. A Bangladeshi equivalent of this requirement, appropriately adapted to the Bangladeshi educational context, could play a similar role.

34.2 The Professional-Academic Divide in Journalism Education

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The divide between professional journalists and academic educators in journalism is a global phenomenon that takes specific forms in Bangladesh with specific consequences for the quality of journalism education. In most countries, there is significant mutual skepticism between practicing journalists, who tend to regard academic journalism educators as people whose lack of current professional experience disqualifies them from teaching journalism, and academic educators, who tend to regard working journalists as practitioners whose lack of theoretical reflection limits their ability to teach the deeper intellectual dimensions of the profession.

In Bangladesh, this divide is particularly sharp. The senior journalists who have the most sophisticated professional knowledge of science journalism in Bangladesh are concentrated in a small number of major media organizations and have limited connection to journalism education institutions. The academics who teach journalism at universities are, in many cases, scholars of communication theory, media history, and media sociology who have limited professional journalism experience and whose engagement with the specific practical demands of contemporary science journalism is limited.

The development of genuine bridges between academic journalism education and professional journalism practice is one of the most important institutional reforms that Bangladesh's journalism education system requires. These bridges take several forms: systematic journalist-in-residence programs that bring experienced science journalists into journalism education programs as temporary faculty; collaborative research projects in which academic journalism educators and working science journalists investigate the practice of science journalism together; professional development programs that bring journalism academics into working newsrooms for sustained periods; and curriculum design processes that genuinely integrate professional knowledge and experience alongside academic theory.

The Media Reform Commission's recommendation that the Chief Adviser's office make the Commission's report available to journalism students and faculty, articulated by Chief Adviser Yunus at the report's handover ceremony in March 2025, reflects an awareness that the reform of journalism education is inseparable from the broader reform of journalism as a profession. The Commission's report, if seriously studied and debated in journalism education programs, would provide a rich foundation for the kind of integrated professional-academic discussion that effective journalism education requires.

34.3 The Question of Academic Freedom and Its Complications for Journalism Education

Academic freedom, the right of academics to conduct research and teach without interference from government, institutional authorities, or external political and economic interests, is a foundational principle of modern university education that has specific implications for journalism education in Bangladesh that deserve careful examination.

The principle of academic freedom is directly relevant to science journalism education because the subjects that science journalism covers, pharmaceutical regulation, environmental policy, agricultural biotechnology, climate change, government health system performance, are all politically sensitive in ways that can create pressures on journalism educators to avoid certain

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subjects, present certain issues in particular ways, or protect certain institutional interests. A journalism educator who wants to teach case studies of pharmaceutical industry manipulation of medical research, or of government suppression of environmental data, or of corporate influence on agricultural science, may face institutional pressures that limit her ability to do so, particularly in public universities where governmental and political pressure on institutional management is a pervasive reality.

The academic freedom concerns of journalism educators in Bangladesh are not merely hypothetical. During the Hasina government period, academics at public universities who were associated with critical political or media commentary faced consequences including politically motivated disciplinary proceedings, denial of promotion, and informal exclusion from institutional privileges. The post-August 2024 period has seen some of these pressures ease, but the structural conditions that enabled them, including the susceptibility of public university management to political pressure and the absence of robust legal protections for academic freedom, have not been fundamentally reformed.

The development of a strong and institutionalized culture of academic freedom in Bangladesh's journalism education programs is a prerequisite for the kind of critical, contested, and intellectually adventurous teaching that good science journalism education requires. This culture cannot be created simply by declaring its existence: it requires institutional structures including transparent governance, independent academic appointments processes, clear and legally enforceable protections against disciplinary action for legitimate academic expression, and a professional culture among academic administrators that values intellectual independence over political compliance.

The international academic freedom frameworks, including the Lima Declaration on Academic Freedom and Autonomy of Institutions of Higher Education (1988) and the various guidelines issued by international university associations including the International Association of Universities, provide normative standards that Bangladeshi universities have not yet fully implemented. The alignment of Bangladeshi higher education governance with these international standards is both an academic and a press freedom issue: academic freedom and press freedom are complementary aspects of the broader freedom of inquiry on which democratic public life depends.

Chapter Thirty-Five: Gender and Science Journalism Education in Bangladesh

35.1 The Gender Gap in Bangladeshi Science Journalism: Evidence and Explanation

The systematic underrepresentation of women in Bangladeshi science journalism, and more broadly in Bangladeshi journalism as a whole, is one of the most significant and most neglected issues in the reform discourse around the profession. The Media Reform Commission's chief, Kamal Ahmed, noted at the World Press Freedom Day 2025 dialogue in Dhaka that fewer than

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ten percent of journalists in Bangladesh are women, a figure that reflects the combined effect of multiple structural barriers to women's participation in the journalism profession.

These barriers operate at multiple levels. At the educational level, the journalism programs at most Bangladeshi universities have gender-balanced or female-majority enrollment at the undergraduate level, which is consistent with Bangladesh's broader trend of female educational advancement. But women students' experiences in journalism education differ from men's in important respects: they face different expectations about the kinds of journalism careers they will pursue, different safety concerns about the fieldwork requirements of certain kinds of reporting, and different forms of peer and faculty discouragement from specializing in investigative, security, or science journalism that may be perceived as particularly demanding or dangerous.

At the early career level, the barriers intensify. Women entering the journalism profession in Bangladesh face a workplace culture that is, in most news organizations, structured around the schedules, lifestyles, and social relationships of male journalists. The late-night reporting shifts, the field reporting requirements, and the informal social networks through which journalists develop source relationships and career opportunities are all organized in ways that disadvantage women, particularly women with family responsibilities. The sexual harassment that women journalists report at extremely high rates in Bangladesh is not just an individual wrong: it is a systemic mechanism through which women are driven out of the profession or confined to the editorial and production roles that are seen as more appropriate for women and less central to the profession's identity.

In science journalism specifically, the gender gap is compounded by the intersection of gender stereotypes with scientific stereotypes. The cultural assumption that science is a masculine domain, which shapes both the education of girls in Bangladesh and the workplace culture of scientific institutions, creates specific barriers for women who want to develop the scientific literacy and the source relationships in scientific institutions that science journalism requires. Women science journalists in Bangladesh report that they are more likely than their male counterparts to face skepticism from scientific sources about their competence and legitimacy, and that they are less likely to be taken into the informal networks through which scientific information is shared in advance of publication.

The specific barriers to women's participation in science journalism are not unique to Bangladesh: the gender gap in science journalism is a global phenomenon documented by studies in many countries. But the specific forms these barriers take in Bangladesh, shaped by the specific cultural expectations around gender, the specific workplace culture of Bangladeshi journalism, and the specific institutional structures of Bangladeshi scientific and educational institutions, require analysis and responses that are specifically adapted to the Bangladeshi context.

35.2 Feminist Science Studies and Their Implications for Science Journalism Pedagogy

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The feminist tradition in science studies, developed by scholars including Donna Haraway, Sandra Harding, Evelyn Fox Keller, and Emily Martin, argues that the dominant forms of scientific knowledge production are not gender-neutral: they embody masculine cognitive styles, masculine institutional cultures, and masculine assumptions about what counts as important scientific knowledge. This tradition has specific implications for how science journalism education should be approached in ways that create genuinely inclusive conditions for women science journalists.

Donna Haraway's concept of "situated knowledge," developed in "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective" (1988), argues against both the "view from nowhere" of objectivist science and the relativism that might seem to follow from the critique of objectivism. Haraway argues for a "feminist objectivity" that is located, embodied, and accountable: that acknowledges the social position and perspective of the knower as a resource for knowledge rather than a source of contamination, and that uses the specificity of marginalized perspectives to illuminate aspects of reality that the dominant perspective renders invisible.

For science journalism education, Haraway's situated knowledge framework suggests that the diversity of the journalist's social position, including her gender, class, ethnic background, and regional origin, is a journalistic resource rather than an irrelevant personal characteristic. The woman science journalist who covers agricultural issues is not merely a neutral observer of a gender-neutral domain: her experience of the specific ways in which climate change, land degradation, and agricultural transformation affect women farmers in Bangladesh gives her access to a dimension of the agricultural story that her male counterpart may not perceive. The science journalism educator who understands this argument will design curricula and practical exercises that actively use the diversity of student backgrounds and experiences rather than treating that diversity as a complication to be managed.

Sandra Harding's concept of "strong objectivity," which argues that the best science is produced not by denying the social location of the researcher but by systematically examining how that location shapes research questions, methods, and interpretations, has similar implications for science journalism education. The science journalist who examines her own positionality, who asks how her class background shapes her access to scientific sources, how her gender affects her relationship with sources and subjects, how her political and cultural assumptions shape what she finds surprising or newsworthy in scientific findings, is not less objective for doing so: she is more rigorously objective because she is accounting for sources of bias that the journalist who claims to have no perspective is not.

35.3 Institutional Approaches to Gender Equity in Science Journalism Education

The development of genuinely gender-equitable science journalism education in Bangladesh requires changes not just in curriculum content but in institutional culture, physical safety, economic access, and the invisible norms through which institutions reproduce gendered hierarchies. Several specific institutional approaches deserve detailed discussion.

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The safety of women journalism students in field settings is an immediate and practical concern that shapes the ability of women students to participate fully in the practical reporting experiences that effective science journalism education requires. A journalism program that requires students to report in the field without providing systematic safety guidance, mentorship from experienced women journalists who can provide contextually specific safety knowledge, and institutional backing when students encounter harassment or danger is not providing equal educational opportunity to its women students. The development of safety protocols for women journalism students, drawing on the growing body of international experience with journalist safety training that specifically addresses the risks faced by women journalists, is an urgent institutional priority.

The economic barriers to women's full participation in journalism education are particularly significant in the context of science journalism, which often requires investment in specialized knowledge development that goes beyond the standard journalism curriculum. Women students who must balance family responsibilities with their studies, who have less access than their male counterparts to the informal networks through which additional learning opportunities and professional contacts are developed, and who face greater financial pressure to complete their education quickly and enter the workforce are less well positioned to pursue the additional specialization in scientific domains that science journalism education should provide. Scholarship programs, mentorship programs, and flexible educational arrangements that specifically address the barriers women students face are essential components of a genuinely equitable science journalism education system.

Chapter Thirty-Six: The Reform Agenda for Science Journalism Education

36.1 The Media Reform Commission's Educational Recommendations and Their Limitations

The Media Reform Commission's report of March 2025 addressed journalism education as one component of a broader media reform agenda. The Commission's educational recommendations, as reported in the available summaries of the report, included proposals for minimum academic qualifications for practicing journalists, for strengthened professional development requirements, and for reforms to the journalism education curriculum to better prepare graduates for independent, critical reporting. Chief Adviser Yunus's response at the report handover ceremony, in which he specifically recommended that the Commission's report be made available to journalism students and faculty, suggested that he understood the reform of journalism education as inseparable from the reform of journalism as a practice.

But the Commission's educational recommendations, while pointing in the right direction, fell short of the comprehensive curricular reform that would be needed to produce genuinely capable science journalists. The focus on minimum academic qualifications for journalists, which addresses the problem of unqualified practitioners entering the profession through non-educational pathways, does not address the content problem: the problem that the formal

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education that qualified journalists receive does not provide them with the scientific literacy, the data skills, and the domain knowledge that science journalism requires.

The limitation reflects a broader characteristic of media reform discussions in Bangladesh: the tendency to focus on structural and institutional reforms, media ownership regulation, legal frameworks, wage structures, and accreditation standards, rather than on the intellectual and pedagogical content of what journalism education and professional development actually provide. Structural reforms are necessary but not sufficient: even a perfectly structured, perfectly funded, and perfectly regulated journalism education system would fail to produce capable science journalists if the curriculum does not provide the scientific literacy, methodological training, and ethical formation that science journalism requires.

The development of a comprehensive reform agenda for science journalism education in Bangladesh requires starting from a different question than the one that drives most media reform discussions. The question is not "what structural changes will make the current journalism education system more efficient and more equitable?" but "what kind of journalist does Bangladesh need, and what kind of education will form that journalist?" The answer to this second question, which this textbook has been developing throughout, is specific and demanding: Bangladesh needs science journalists who are scientifically literate, methodologically rigorous, institutionally critical, ethically formed, legally knowledgeable, linguistically skilled in both Bangla and English, and committed to the democratic public interest. The educational system that will form such journalists needs to be deliberately designed to develop each of these capacities through an integrated program of academic instruction, practical experience, mentorship, and sustained reflection.

36.2 A Proposed Curriculum Framework for Science Journalism Education in Bangladesh

The following discussion proposes a framework for a science journalism curriculum that addresses the specific gaps and requirements identified throughout this textbook. This is not a prescriptive blueprint but an intellectual framework: a set of organizing principles and content priorities that individual institutions should adapt to their specific contexts, resources, and student populations.

The proposed framework is organized around five content areas that should be woven throughout the curriculum rather than treated as separate courses: scientific literacy and methodology, Bangladeshi and international media law and ethics, the political economy of science and media in Bangladesh, practical science journalism skills including data journalism and domain-specific reporting, and the philosophical and theoretical foundations of science journalism as a democratic practice.

Scientific literacy and methodology should be introduced systematically from the first year of a journalism program and developed progressively throughout the curriculum. The foundational level should include basic statistical reasoning, the logic of scientific inference, the distinction between correlation and causation, and the basics of research design in the natural and social sciences. The intermediate level should include domain-specific scientific knowledge in at least

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two of the major areas of science journalism relevant to Bangladesh, drawn from the areas of public health, environmental science, agricultural science, and digital technology. The advanced level should include the sociology and philosophy of science, the political economy of scientific knowledge production, and sustained engagement with contested scientific questions in specific domains.

Bangladeshi and international media law and ethics should be taught not as a separate course but as a cross-cutting concern that appears in every area of the curriculum. Students should understand the constitutional and statutory framework for press freedom in Bangladesh, the specific provisions of the laws that most directly affect science journalists, the international human rights framework and its application to press freedom, and the ethical principles that govern the specific challenges of science journalism including the management of sources and confidential information, the representation of uncertainty, and the balancing of accountability with harm minimization.

The political economy of science and media in Bangladesh should be taught as an explicitly analytical subject, using the frameworks of political economy, sociology, and critical theory to understand the institutional structures that shape both scientific knowledge production and media practice in Bangladesh. This area of the curriculum should develop students' capacity to analyze the funding relationships, regulatory frameworks, and institutional interests that shape what science is produced and how it is communicated, and to recognize the specific forms of institutional bias and conflict of interest that are most common in the Bangladeshi context.

Practical skills in science journalism, including data journalism, domain-specific reporting, and the specific techniques of science journalism including expert source identification, scientific document analysis, and the communication of uncertainty, should be developed through systematic, progressively demanding practical exercises organized around real scientific issues of importance to Bangladesh. These exercises should be designed to develop specific competencies through guided practice rather than to produce polished journalism from students who have not yet developed the underlying skills.

The philosophical and theoretical foundations of science journalism should run through the entire curriculum as a reflective dimension of all other areas, not as a separate body of theory disconnected from practice. Students should develop the capacity to articulate the democratic purposes of their work, the philosophical commitments that guide their judgments, and the theoretical frameworks that help them understand the complex institutional and epistemological dynamics of their practice.

36.3 International Models Worth Studying and Critically Adapting

Several international models of science journalism education deserve careful examination for what they offer to the development of Bangladeshi science journalism education, with the caution developed throughout this textbook that direct transplantation of international models is rarely appropriate and that critical adaptation to the Bangladeshi context is always necessary.

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The Knight Science Journalism Program at the Massachusetts Institute of Technology offers the most intensive and most prestigious fellowship program in science journalism in the world. The program provides experienced science journalists from around the world with a year of immersive scientific education, research access, and professional development at one of the world's leading scientific research institutions. The program's most distinctive feature is its emphasis on deep scientific immersion: fellows are expected to attend lectures and seminars across multiple scientific disciplines, to engage directly with scientific researchers, and to develop a level of scientific understanding that most science journalists do not otherwise achieve.

The Knight Program's model is not directly replicable in Bangladesh for obvious resource reasons, but its intellectual framework, the idea that science journalists need sustained immersion in scientific research environments rather than just training in journalism techniques, is directly applicable. Even without the resources of MIT, journalism education programs in Bangladesh could develop systematic partnerships with scientific research institutions, including BRAC, icddr,b, BRRI, and the various university science departments, that provide journalism students with sustained exposure to the practice of scientific research rather than merely its products.

The European Journalism Centre's science journalism training programs, which have supported the development of science journalism across Europe and increasingly in the Global South through a combination of online training resources, regional workshops, and small grant programs for investigative science journalism, offer a more immediately accessible model for Bangladesh. The EJC's approach, which combines technical training in specific science journalism skills with facilitated peer learning among journalists from different countries and institutional contexts, has been particularly effective in building professional communities of science journalists who support and mentor each other across institutional boundaries.

The journalism education programs at universities in the BRICS countries, particularly at the University of the Witwatersrand and Rhodes University in South Africa, at the Indian Institute of Mass Communication in New Delhi, and at Renmin University of China, offer comparative models from the Global South that are more contextually relevant to Bangladesh than the elite American and European programs. The South African journalism education tradition, in particular, has developed sophisticated approaches to combining technical journalism training with critical political education in the context of a society navigating the legacy of apartheid and the challenges of post-liberation governance, and many of the resulting pedagogical approaches are applicable in the Bangladeshi context.

Chapter Thirty-Seven: Professional Associations, Continuing Education, and the Formation of Professional Community

37.1 The Landscape of Journalism Professional Associations in Bangladesh

The professional associations of journalists in Bangladesh constitute an important dimension of the informal educational system through which professional norms, skills, and values are

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transmitted, debated, and developed. These associations, which are numerous, divided, and often politically aligned, have had a complex and often problematic relationship with the development of professional journalism standards in Bangladesh, but they also represent potential vehicles for the continuing professional education that formal educational institutions cannot fully provide.

The National Press Club of Bangladesh, the Dhaka Reporters' Unity, the Bangladesh Federal Union of Journalists, the Broadcast Journalist Center, and numerous other organizations at the national and regional level all play roles in the professional landscape of Bangladeshi journalism. Their activities include the recognition of journalistic achievement through awards programs, the advocacy for journalists' rights and press freedom, the negotiation of wage and working condition standards, and, in some cases, the provision of training and professional development programs.

The effectiveness of these organizations in supporting the development of quality science journalism has been limited by several structural factors. The most important is political division: the major journalists' associations in Bangladesh have historically been divided along political lines, with different organizations aligned with different political parties and factions, which has made it difficult for them to maintain unified positions on professional standards questions that transcend political loyalty. During the Hasina period, many journalists' association leaderships were effectively captured by the ruling party, which used them to manage and discipline the journalism profession rather than to develop and protect it.

The post-August 2024 period has seen some efforts to rebuild professional association independence, but the deep structural problem of political alignment has not been fully resolved. The 2025-2026 pre-election period saw continuing evidence that journalists' associations were being used as vehicles for political advocacy rather than purely professional purposes, which limits their capacity to serve as genuine vehicles for the development of professional standards in science journalism.

37.2 The Anti-Corruption Investigative Journalism Awards and Their Significance for Science Journalism

One of the most interesting developments in Bangladeshi journalism recognition in recent years is the Anti-Corruption Investigative Journalism Awards (IJA) run by Transparency International Bangladesh. The 2025 awards, which honored four journalists and one documentary program across different categories including regional newspaper, national newspaper, and television, represent one of the few formal institutional mechanisms for recognizing excellence specifically in investigative journalism in Bangladesh.

The IJA's significance for science journalism is indirect but real. By recognizing investigative journalism that serves the public interest, the awards create cultural and professional capital for the kind of accountability journalism that this textbook has argued is the most important function of science journalism. The recognition of journalists like Rashidul Hasan of The Daily Sun and Faisal Islam of Daily Gramer Kagoj for their regional and national newspaper investigative work signals to the profession that such work is valued and that its pursuit is professionally rewarding.

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But the IJA's specific focus on anti-corruption journalism, while important, does not capture all the dimensions of investigative science journalism that deserve recognition and cultivation. A journalism award that specifically recognized excellence in science journalism, including investigative coverage of pharmaceutical regulation, environmental accountability, agricultural policy, and technology governance, alongside the general investigative journalism recognized by the IJA, would provide a more complete institutional framework for the recognition and development of science journalism excellence.

The development of such an award, organized by a coalition of journalism organizations, scientific institutions, and civil society groups, is one of the more feasible and more valuable institutional reforms that could support the development of science journalism in Bangladesh. Award programs are relatively inexpensive to operate but can have significant cultural effects by changing the profession's understanding of what is valued and what is excellent.

37.3 The Emerging Role of Online Professional Communities and Their Limitations

The development of online professional communities for science journalists, through social media platforms, email lists, and dedicated professional networking platforms, represents an important dimension of the informal continuing education ecosystem that supplements formal training. Facebook groups for Bangladeshi science journalists, WhatsApp networks connecting journalists who cover specific scientific domains, and the emerging presence of Bangladeshi science journalists on professional platforms like LinkedIn and Twitter/X have created spaces for the sharing of information, the discussion of professional challenges, and the informal mentorship and peer support that the more formal structures of professional associations often fail to provide.

The limitations of these online communities are significant, however. They are self-selecting, drawing primarily from the more digitally connected, more urban, and more formally educated segments of the journalism profession. They replicate the social networks and professional hierarchies of the offline world rather than transcending them. They are vulnerable to the misinformation and political polarization that characterize the broader social media environment in Bangladesh. And they provide the relatively superficial forms of information exchange that come naturally to social media platforms rather than the sustained, structured, reflective learning that genuine professional development requires.

The most valuable online professional communities for Bangladeshi science journalists are those that are organized around specific substantive concerns, that have active moderation to maintain quality, and that connect online discussion to offline learning activities. The CPRD-TCW climate journalism network, the icddr,b-connected health journalism networks, and the environmental journalism communities organized around specific campaigns like the Sundarbans protection advocacy are examples of communities that have developed this kind of substantive focus and that provide genuine professional development value alongside their advocacy functions.

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Chapter Thirty-Eight: The Philosophical Dimensions of Journalism Pedagogy

38.1 The Ethics of Teaching Journalism in an Authoritarian Media Environment

The pedagogy of journalism in a context where press freedom is systematically violated creates a specific set of ethical challenges for journalism educators that deserve direct attention. The journalism educator who teaches her students the values and practices of independent, investigative, truth-seeking journalism is implicitly preparing them for a professional life in which those values and practices may lead to their arrest, harassment, economic ruin, or physical harm. Is it ethical to prepare students for a profession under these conditions without fully equipping them to understand and navigate the risks they will face?

This question has no easy answer, but it has a clear implication: journalism education in Bangladesh has an obligation to be completely honest with students about the conditions of professional practice, to provide them with the legal knowledge and practical skills to navigate those conditions safely, and to develop in them the realistic assessment of risk that enables informed professional decision-making rather than either reckless courage or paralyzing caution. The journalism educator who teaches the values of investigative independence without teaching the legal vulnerabilities that investigating certain topics creates, or the journalism educator who teaches the importance of challenging official scientific claims without teaching the specific legal mechanisms through which such challenges are suppressed, is not serving her students.

The ethics of journalism pedagogy in a repressive environment is also connected to the pedagogical relationship of trust and power between teacher and student. The journalism student who is encouraged, through the enthusiasm and commitment of her teacher, to develop journalistic ambitions and professional commitments that put her at risk in a hostile environment has a legitimate claim on her teacher's honest assessment of those risks. The teacher who cultivates journalistic courage without commensurate realism about consequences is not a fully ethical teacher, even if her intentions are entirely good.

At the same time, the journalism educator who is so focused on the risks of journalism that she discourages students from aspiring to the most demanding and most important forms of journalistic practice is also failing her students and her society. The ethics of journalism pedagogy in a repressive environment requires holding both truths simultaneously: the genuine importance and genuine danger of independent science journalism, and the genuine possibility of practicing it with courage and intelligence even under conditions of significant constraint.

38.2 The Question of Journalistic Objectivity and Its Pedagogical Treatment

The concept of journalistic objectivity is one of the most contentious and most misunderstood concepts in journalism education globally, and its specific history in the Bangladeshi context adds dimensions of complexity that require careful pedagogical treatment. The conventional teaching of objectivity as a professional norm, which instructs journalists to present "both sides" of every story, to avoid expressing personal opinions, and to attribute all claims to named

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sources rather than asserting them independently, is a misleading and in some respects actively harmful simplification of a genuinely complex set of professional commitments.

The philosophical critique of journalistic objectivity, developed by scholars including Michael Schudson, Robert Karl Manoff, Gaye Tuchman, and Stuart Hall, argues that the conventional objectivity norm serves ideological functions: by treating the perspectives of official sources as the default reference point for "objective" reporting and treating challenges to official perspectives as representing "bias" or "advocacy," the objectivity norm systematically privileges the views of powerful institutions while marginalizing the perspectives of those who challenge them. This analysis is directly relevant to science journalism in Bangladesh: the science journalist who treats official scientific institutions' statements as "objective" and treats community challenges to those statements as representing "unscientific" perspectives is not being objective; she is reproducing the power asymmetry of the institutional landscape.

The most sophisticated contemporary thinking about journalistic objectivity, developed in the work of scholars including Stephen Ward and in the practice of news organizations like ProPublica and the Intercept, distinguishes between the underlying commitment to evidence-based, transparent, and honest reporting, which is genuinely valuable and should be preserved, and the specific professional norms through which that commitment has been institutionalized, which are historically contingent and in some respects counterproductive. The goal of journalism pedagogy should be to develop journalists who are deeply committed to the underlying epistemic values of accuracy, evidence, transparency, and honesty, while also developing the critical capacity to question the specific institutional forms through which those values are expressed in current professional practice.

For science journalism specifically, this means teaching students both the commitment to evidence-based reporting and the critical awareness of how "scientific evidence" is constructed, contested, and weaponized in specific institutional and political contexts. The student who emerges from this education is not a relativist who treats all scientific claims as equally valid: she is a rigorous empiricist who understands that the production and communication of scientific knowledge is a social practice shaped by power and interest, and who brings that understanding to bear on her evaluation and reporting of scientific claims.

38.3 The Teacher's Dilemma: Ideology, Impartiality, and the Formation of Journalistic Judgment

Every teacher of journalism faces a version of what might be called the teacher's dilemma: the tension between the pedagogical goal of developing students' capacity for independent judgment and the unavoidable reality that teaching is always a form of influence, and that the teacher's own values, perspectives, and judgments inevitably shape what she teaches and how she teaches it. This dilemma is particularly acute in journalism education because journalistic independence from external influence is a core professional value, and the journalism educator who too strongly imposes her own views on her students is undermining the very capacity she is trying to develop.

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The resolution of this dilemma lies not in the pretense of teacher neutrality, which is both philosophically incoherent and pedagogically dishonest, but in the development of pedagogical practices that make the teacher's own commitments and perspectives transparent and that actively cultivate students' capacity to disagree with, challenge, and move beyond their teachers' perspectives. The journalism educator who presents her own analysis of a contested scientific question as the correct analysis is undermining her students' development; the educator who presents her analysis clearly, argues for it honestly, and explicitly invites students to challenge it with their own evidence and reasoning is serving that development.

This pedagogical approach, which is rooted in the Socratic tradition of philosophy education and in the critical pedagogy tradition associated with Freire and Giroux, requires intellectual courage from the educator: the willingness to have her own views challenged, to be wrong in front of her students, and to model the kind of evidence-responsive reasoning that she is trying to cultivate in them. It also requires intellectual generosity: the recognition that her students' backgrounds, experiences, and perspectives may give them access to dimensions of reality that she does not have, and that the educational process should enrich her understanding as well as theirs.

Chapter Thirty-Nine: The Future of Science Journalism Education in Bangladesh

39.1 Digital Transformation and Its Implications for Journalism Education

The digital transformation of journalism, which has accelerated dramatically in Bangladesh since the widespread adoption of smartphones and social media platforms in the 2010s, creates both new opportunities and new challenges for science journalism education that have not yet been fully integrated into most Bangladeshi journalism curricula.

The opportunities are significant. Digital tools make it possible for journalism students to produce multimedia science journalism, combining text, images, audio, video, and interactive data visualizations, at a quality level that was previously available only to well-resourced professional newsrooms. The internet provides access to scientific literature, data sources, and expert networks that were previously unavailable in Bangladesh. Social media platforms, despite their serious problems discussed throughout this textbook, provide channels for the direct distribution of journalism to audiences that do not rely on the editorial gatekeeping of established media organizations, which creates possibilities for independent science journalism ventures that were not previously viable.

The challenges are equally significant. The digital environment creates new forms of pressure toward speed and sensationalism that work against the careful, evidence-based reporting that science journalism requires. The abundance of information online creates new requirements for source evaluation and verification that journalism education has not fully addressed. The surveillance capabilities that digital tools create, including both the surveillance of journalists by governments and the profiling of readers by platforms, create new safety and ethical challenges.

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And the economic disruption that digital transformation has produced in the media industry has reduced the resources available for quality journalism education.

The journalism education system's response to digital transformation has been largely superficial: adding courses in social media management, video production, and digital journalism tools without fundamentally rethinking the intellectual and ethical formation that digital journalism requires. A more substantive response would integrate digital literacy, data science, algorithmic literacy, platform governance, and digital safety into the core intellectual formation of science journalists, not as technical add-ons but as essential dimensions of the epistemological and ethical framework within which digital science journalism is practiced.

The artificial intelligence dimension of digital transformation deserves specific attention in the educational context. The rapid development of large language models, image generation systems, and other AI tools has created both new capabilities for journalism, including automated data analysis, document summarization, and natural language processing for large corpus analysis, and new risks, including the potential for AI-generated misinformation, the automation of journalistic tasks in ways that reduce the human judgment essential for accountability journalism, and the use of AI tools for surveillance and censorship.

The science journalist who is not educated about AI cannot adequately cover the AI story, which is rapidly becoming one of the most important stories in Bangladeshi technology and society reporting. She also cannot effectively use AI tools in her own reporting practice, taking advantage of their genuine capabilities while avoiding their significant limitations and risks. Journalism education programs in Bangladesh need to integrate a critical and practical understanding of AI into their curricula now, rather than waiting for the technology to stabilize before engaging with it educationally.

39.2 The Science Journalism Hub: A Vision for Institutional Innovation

One of the most potentially transformative institutional innovations for science journalism education in Bangladesh would be the creation of a dedicated Science Journalism Hub: an institution specifically designed to bridge the gap between scientific knowledge and journalistic practice, to develop the integrated competencies that science journalism requires, and to serve as a center for research, training, and professional development in the field.

Such a Hub, if properly designed and resourced, would serve several distinct functions. It would provide intensive short-course training for working journalists in specific scientific domains, data skills, and science journalism methods. It would conduct research on the practice and impact of science journalism in Bangladesh, generating the evidence base needed for evidence-based reform of the field. It would maintain a library of scientific literature, data sources, and expert contacts accessible to working science journalists. It would convene regular forums in which scientists, journalists, policymakers, and civil society representatives engage with each other on the scientific issues of most importance to Bangladesh. And it would provide legal, professional, and institutional support for journalists who face challenges in connection with their science journalism.

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The institutional model for the Hub could draw on several international precedents, including the Science Media Centre in the United Kingdom, which provides rapid-turnaround expert comment and context on scientific stories for working journalists, the Knight Center for Environmental Journalism at Michigan State University, which focuses specifically on environmental journalism training and research, and the Pulitzer Center on Crisis Reporting, which provides project-specific support for in-depth international reporting. Each of these models offers relevant inspiration while being significantly different from what is needed in the Bangladeshi context.

The funding of a Science Journalism Hub would require a coalition of institutional supporters, since no single source has both the interest and the resources to support it adequately. Potential supporters would include international journalism development organizations such as ICFJ and the Reuters Institute, international scientific funders with interests in Bangladesh such as the Wellcome Trust and the Gates Foundation, Bangladeshi civil society organizations including TIB and the major NGO research institutions, and potentially several of the major Bangladeshi media organizations with a genuine interest in developing science journalism capacity. The governance of the Hub would need to be structured to ensure genuine independence from all of these funders while remaining accountable to the journalism profession and the broader public interest.

39.3 The Integration of Science Journalism into Bangladesh's Broader Scientific Development Agenda

The relationship between science journalism education and Bangladesh's broader scientific development agenda is an underexplored but potentially important connection. The Bangladesh National Science and Technology Policy, the University Grants Commission's research development frameworks, and the specific science and technology initiatives of major Bangladeshi universities all set priorities and make investments that shape the scientific landscape that science journalism covers. The development of stronger connections between the journalism education system and the scientific education and research system could benefit both, creating the conditions for a more scientifically literate journalism profession and a more publicly engaged scientific community.

The specific connection between science journalism education and the scientific research ecosystem could take several forms. Joint degree programs or formal curriculum partnerships between journalism and science departments, allowing students to develop combined competencies in journalism and a scientific field, would address one of the most critical gaps in the current education system. Structured research collaboration between journalism educators and scientific researchers, focused on questions of science communication and public understanding of science in Bangladesh, would generate the knowledge needed to inform better practice in both fields. And the development of science communication training for scientists, helping them to understand how to engage effectively with journalists and the public, would strengthen the source side of the journalism-science relationship.

Chief Adviser Yunus's direct involvement in the Media Reform Commission's work, combined with his background as a scientist and economist with a strong commitment to evidence-based

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development, creates a specific political opportunity to connect the media reform agenda with the broader science and technology development agenda in Bangladesh. Whether this opportunity is seized will depend partly on the advocacy of journalism educators, science journalists, and civil society organizations who understand the connection and can articulate it effectively to policymakers.

Coda to Part Four: The Formation of the Science Journalist as a Lifelong Project

Part Four of this textbook has examined the educational institutions and professional training systems that are responsible for forming science journalists in Bangladesh, finding them to be significantly inadequate to the demands of the profession as defined throughout this book, and identifying both the specific reforms needed and the intellectual frameworks within which those reforms should be designed.

The conclusion of this examination is not pessimistic, despite the many inadequacies it has documented. The inadequacies of the current system are not the product of indifference or incompetence but of historical constraints, resource limitations, and the political and institutional environment within which journalism education has developed. The post-August 2024 period, despite its many disappointments and continuing dangers, has opened genuine possibilities for reform that did not exist before. The Media Reform Commission's work, the international engagement with Bangladeshi media reform, and the growing awareness within the journalism profession itself of the need for deeper intellectual and scientific formation all represent resources for change that did not exist at equivalent strength a decade ago.

The formation of the science journalist is not, however, primarily a matter of educational institutions, important as those are. It is, as this textbook has argued throughout, a lifelong project of intellectual development, ethical reflection, and practical engagement that begins in formal education but continues throughout a career. The student who completes a journalism program with the intellectual foundations that Part Four has argued for is not a finished science journalist: she is someone who has the tools and the orientation to continue developing throughout her career, to learn from the specific challenges and controversies she encounters, to engage seriously with the scientific literature and the scientific community in her areas of specialization, and to contribute, through her practice, to the ongoing development of science journalism as a democratic institution in Bangladesh.

The formation of this kind of journalist requires more than good courses and good teachers: it requires the existence of a professional community in which the commitment to quality science journalism is genuinely shared and genuinely rewarded. Part Five of this textbook will examine the gender dimensions of this professional community in detail, and Parts Six through Nine will examine the specific cross-cutting themes of digital transformation, international scientific collaboration, science communication in Bangla, and the long-term future of the profession. Throughout, the argument will remain the one with which this textbook began: that science journalism in Bangladesh, properly understood and properly practiced, is one of the most

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important democratic institutions the country possesses, and that the development of the conditions for its flourishing is not just a professional but a civic and political imperative.

Chapter Notes and Further Reading for Part Four

The following resources provide essential background for the themes developed in Part Four, organized by chapter area.

On the theory of journalism education, John Dewey's "Democracy and Education" (1916) and "Experience and Education" (1938) remain foundational. Paulo Freire's "Pedagogy of the Oppressed" (1968) provides the critical pedagogy framework that has most productively challenged conventional journalism education assumptions. Henry Giroux's "Teachers as Intellectuals" (1988) develops Freire's insights in the specific context of professional education. The collection edited by Barbie Zelizer, "The Changing Faces of Journalism" (2009), provides a useful contemporary survey of debates in journalism education theory. Lee Bollinger and Geoffrey Stone's "The Free Speech Century" (2019) places journalism education within the broader context of liberal education for democratic citizenship.

On scientific literacy for journalists, the most practically useful resources include Mariette DiChristina's work on science journalism education at Scientific American, the Knight Science Journalism Program's publications on science literacy for journalists, and the Science Media Centre's practical guides to specific scientific domains including epidemiology, climate science, and genomics. For the philosophy of science as relevant to science journalism, Peter Godfrey-Smith's "Theory and Reality: An Introduction to the Philosophy of Science" (2003) provides the most accessible and most useful introduction.

On data journalism, Paul Bradshaw's "Scraping for Journalists" and his associated Online Journalism Blog provide the most practically useful introduction to data acquisition and analysis for journalists. Jonathan Stray's "The Curious Journalist's Guide to Data" provides a conceptual framework for thinking about how journalists should engage with quantitative information. For the specific Bangladeshi context, the Data Desk at The Daily Star's publications and the occasional reporting of The Business Standard on data journalism methodology provide the most directly relevant local examples.

On gender and science journalism, the reports of the International Women's Media Foundation on women science journalists globally, the work of Sharon Dunwoody at the University of Wisconsin on gender and science communication, and the Sanef Gender Forum's analysis of gender disparities in South African journalism provide comparative models. For the feminist science studies foundations, Donna Haraway's "Situated Knowledges" essay and Sandra Harding's "The Science Question in Feminism" (1986) are essential primary texts.

On the Media Reform Commission's work and its educational implications, the full text of the Commission's report, which Chief Adviser Yunus recommended be made available to journalism

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students and faculty, should be required reading for all students of Bangladeshi science journalism. The Strategic Action Plan for Media Reform in Bangladesh 2025-2030 published by the Media Resources Development Initiative provides an important supplementary framework for understanding the longer-term reform agenda.

This concludes Part Four of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge." Part Five will examine gender and science journalism in Bangladesh in depth, exploring the specific experiences, contributions, challenges, and professional possibilities of women science journalists in the country's rapidly changing media environment.

PART FIVE: GENDER, POWER, AND THE EPISTEMICS OF SCIENCE JOURNALISM IN BANGLADESH

The Architecture of Exclusion, the Politics of Knowledge, and the Long Struggle for a Feminist Science Press

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Prolegomena to Part Five: Why Gender Is Not a Special Topic

There is a persistent and deeply mistaken tendency, in journalism education as in many other professional fields, to treat gender as a specialization, a supplementary concern, an addendum to the main curriculum that might be addressed in a single elective course or a dedicated chapter at the end of a textbook. This tendency itself reveals something important about the structure of power that Part Five is written to examine. When the experiences, contributions, obstacles, and intellectual frameworks associated with women are sequenced after the "main" content of a discipline, the sequencing performs the very marginalization it might nominally critique. The student is invited to understand that women's journalism is a subset of journalism, that feminist epistemology is a variant of epistemology, and that the specific challenges facing women science journalists in Bangladesh are interesting edge cases rather than central features of the system being described.

This textbook has tried throughout to resist that logic. Part One discussed women's contributions to the history of Bangladeshi science journalism alongside men's, refusing to ghetto the discussion of gender into a separate compartment. Parts Two and Three analyzed the legal and institutional framework of Bangladeshi journalism in ways that were explicitly attentive to how those frameworks produce gendered consequences, even when, and sometimes especially when, they appear formally gender-neutral. Part Four examined journalism education with sustained attention to the ways in which the curriculum, the pedagogical relationship, and the institutional culture of journalism schools reproduce or challenge gendered hierarchies of knowledge and authority.

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Part Five takes gender as its primary analytic lens not because gender is the only lens through which science journalism should be examined but because it is the lens that most systematically reveals the connection between the epistemological foundations of science journalism and its institutional and political organization. The question of how we know what we know, of whose knowledge counts as legitimate and whose is dismissed, of what it means to report on science in a society structured by profound inequalities of power, cannot be answered without confronting gender as a constitutive dimension of knowledge, authority, and professional practice.

This is an argument with deep roots in the feminist philosophy of science, in the sociology of knowledge, and in the specific history of women's participation in journalism and science in Bangladesh and the broader South Asian context. Part Five develops this argument across eight chapters and two codas, moving from the philosophical and theoretical foundations of feminist epistemology to the lived experience of women science journalists in Bangladesh, from the legal and policy landscape to the intersectional dimensions of gender with class, religion, and region, and from the specific crisis of digital violence against women journalists to the visionary possibilities for a genuinely gender-just science journalism.

The argument of Part Five, stated at the outset so that the student can hold it in mind as a thread connecting the detailed analyses that follow, is this: gender is not a variable that operates on the surface of science journalism, producing statistical disparities in hiring, promotion, and beat assignment that could in principle be corrected by technical interventions without changing anything fundamental. Gender is, rather, a constitutive dimension of the knowledge practices, the institutional cultures, the professional norms, and the epistemological assumptions of science journalism itself, in Bangladesh as elsewhere. The reform of science journalism along genuinely gender-just lines requires not just adding women to existing structures but transforming those structures in ways that challenge and reconfigure the fundamental assumptions about knowledge, objectivity, authority, and public reason that have made science journalism what it is. This is a more demanding and more interesting project than diversity management, and it is the project that Part Five proposes.

Chapter Forty: The Gendered Architecture of Knowledge: Feminist Epistemology and Science Journalism

40.1 From Haraway to Harding: The Concept of Situated Knowledges

The publication of Donna Haraway's essay "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective" in 1988 in the journal Feminist Studies represents one of the most important interventions in the twentieth century philosophy of science, and its implications for science journalism have been insufficiently explored. Haraway's essay was a response to the apparent dilemma faced by feminist critics of science: how to criticize the objectivity claims of mainstream science without abandoning the possibility of making knowledge claims at all. If scientific knowledge is always partial, always positioned,

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always shaped by the social situation of the knower, then how can feminists claim that their criticisms of sexist science are any more reliable than the science they are criticizing?

Haraway's answer was to argue that the dichotomy between the false objectivity of the "view from nowhere" and the apparent relativism of "anything goes" is itself a false one. She proposed instead the concept of situated knowledge: knowledge that is always located in a particular body, in a particular social and historical position, and that acknowledges this location as a feature rather than a defect of the knowledge produced. The situated knower does not claim to see everything from everywhere; she claims to see something particular from somewhere specific, and the value of that knowledge lies precisely in the specificity and honesty of its situatedness.

For the science journalist, Haraway's framework is not merely philosophically interesting but practically consequential. It means that the journalist who pretends to report "the facts" from a position of detached objectivity is not producing more reliable knowledge but less transparent knowledge. She is hiding the particular position from which she sees, the particular interests that shape what she notices and what she ignores, the particular professional norms and institutional pressures that determine which sources she consults and which she dismisses. The pretense of objectivity does not eliminate these influences; it merely conceals them, making critical evaluation of the resulting journalism more difficult rather than less.

By contrast, the journalist who acknowledges her situatedness, who is explicit about the perspective from which she is reporting, who identifies her sources and their interests, and who acknowledges the limits of her knowledge, is producing more epistemically honest and potentially more epistemically valuable journalism, not less. This is a deeply counterintuitive claim for many journalists trained in the tradition of professional objectivity, and it is a claim that has been contested, misunderstood, and sometimes distorted into a license for transparent advocacy rather than a call for transparent scholarship. But properly understood, Haraway's situated knowledges framework represents a significant advance on the naive objectivism of the transmission model of science journalism, and its implications deserve sustained exploration in the Bangladeshi context.

Sandra Harding's development of standpoint theory provides a complementary and in some ways more politically direct framework. Harding's central argument, developed across several books including "The Science Question in Feminism" (1986), "Whose Science? Whose Knowledge?" (1991), and "Sciences from Below" (2008), is that knowledge produced from the standpoint of marginalized groups is in certain systematic ways epistemically superior to knowledge produced from the standpoint of dominant groups, because marginalized knowers must understand both their own social reality and the dominant reality in order to navigate and survive within it, while dominant knowers can afford to remain ignorant of the perspectives of those they dominate.

This argument has strong and obvious political resonance in the Bangladeshi context, where the knowledge produced by rural women affected by arsenic contamination, by female garment workers exposed to toxic chemicals, and by women living in coastal areas facing the consequences of climate change is systematically excluded from official scientific discourse and from the science journalism that mediates that discourse for public audiences. Harding's

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standpoint epistemology provides a framework for arguing that this exclusion is not merely politically unjust but epistemically damaging: that the scientific and journalistic knowledge produced without access to the perspectives of marginalized knowers is systematically incomplete and systematically distorted in ways that serve the interests of the dominant.

For the science journalist, standpoint theory's most important practical implication is in the choice of sources. The traditional science journalist's source hierarchy, which places peer-reviewed scientific literature and accredited institutional scientists at the top and lay accounts, traditional knowledge, and community experience at the bottom, reflects and reinforces the epistemic hierarchies that standpoint theory critiques. It produces a kind of science journalism that is reliable about what professional scientists think but systematically unreliable about how the phenomena being studied affect the people most immediately involved in them. The standpoint-informed science journalist does not simply invert this hierarchy, treating lay accounts as more reliable than scientific ones in all cases; she develops the more complex and more demanding capacity to evaluate different forms of knowledge for different purposes, understanding that the expert chemist knows things about arsenic metabolism that the rural farmer does not, and that the rural farmer knows things about the social consequences of arsenic exposure in her community that the expert chemist does not.

The development of standpoint epistemology has not been without internal controversy within feminist philosophy. Critics from within the feminist tradition, including postmodern feminists like Judith Butler and empiricist feminists like Helen Longino, have raised important objections to standpoint theory. Butler's poststructuralist critique argues that the concept of a unified "women's standpoint" presupposes a stable category of "women" that is itself a product of the very gender system feminism seeks to dismantle, and that the political deployment of this category may inadvertently reinforce the binary gender distinctions it intends to challenge. Longino's feminist empiricism argues that the criteria for evaluating knowledge claims should remain those of empirical adequacy and logical consistency, modified to include explicit attention to background assumptions and their social sources, rather than being replaced by a standpoint-based criterion of epistemic privilege.

These internal debates within feminist epistemology are not merely academic; they have direct implications for how science journalism is practiced. The question of whether women science journalists have a specific epistemic advantage in covering science-society issues, or whether they bring specific forms of knowledge that complement rather than replace other forms, or whether the relevant criterion is the elimination of systematic bias from all forms of scientific knowledge production, generates different practical conclusions about hiring practices, editorial policies, source selection, and the training of science journalists. Part Five engages these debates throughout, rather than adopting a single framework as definitively correct.

The most recent development in this tradition, which is directly relevant to science journalism practice, is the concept of affective epistemology developed in recent scholarship including work by Sandra Banjac and others published in 2024 and 2025. Affective epistemology argues that the role of emotions and embodied experience in journalistic knowledge production has been systematically undervalued by a professional culture that treats emotional engagement as a threat

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to objectivity rather than as a potential source of epistemic access. The journalist who is moved by what she witnesses, whose body registers the physical reality of the environments and communities she covers, whose emotional responses provide information about the human significance of scientific findings, is not a less reliable journalist; she is a journalist whose embodied knowledge enriches her reporting in ways that the purely cognitive, disembodied ideal of journalistic objectivity cannot capture. This is a claim with specific and urgent relevance in the Bangladeshi context, where the scientific stories that most demand public understanding, including climate change, occupational disease, food insecurity, and epidemic disease, are stories that directly affect the embodied lives of millions of people, and where the purely cognitive, technically oriented science journalism of the transmission model is radically insufficient to the task.

40.2 Feminist Postmodernism and the Problem of Journalistic Objectivity

The most radical challenge to conventional science journalism practice that feminist epistemology generates comes from feminist postmodernism, particularly from the tradition of thought associated with Judith Butler, Gayatri Chakravorty Spivak, and their intellectual precursors. Feminist postmodernism's critique of objectivity is more thoroughgoing than standpoint theory's, because it extends the critique not just to the objectivity of individual knowledge claims but to the very categories through which science and journalism organize their objects of knowledge.

The concept of the "can the subaltern speak" question, posed by Spivak in her 1988 essay of that title, is directly relevant to science journalism in Bangladesh. Spivak's argument, developed through a reading of the Indian practice of sati (widow immolation) in the colonial period, is that the subaltern, meaning the radically marginalized subject, cannot speak within the discursive frameworks of either colonial or nationalist discourse, because both frameworks position the subaltern as an object of knowledge rather than a subject who produces knowledge. The Indian woman of the colonial period was spoken about by colonial administrators and by nationalist male leaders, each claiming to represent her interests, but neither framework made it possible for her to speak in her own terms, from her own perspective, in her own language.

The application of this argument to science journalism in Bangladesh is not straightforward, but it is illuminating. The women most directly affected by the scientific issues that matter most in Bangladesh, including climate-displaced women in the coastal chars, female garment workers suffering from occupational disease, rural women managing the consequences of arsenic contamination, are rarely the subjects of science journalism in a sense that would allow them to speak for themselves; they are more commonly the objects of journalism, the people whose situations are described and analyzed from outside, by journalists and scientists whose own social position is quite different from theirs. Even when such women are quoted in news stories, the framework within which their words appear, the scientific and political framing that determines what their words mean and what they illustrate, is not one they have participated in constructing.

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This is not a problem that can be solved by simply quoting women more often, though that is a necessary and important step. It requires the more fundamental transformation of the epistemological framework within which science journalism operates: the recognition that the communities affected by scientific change are not merely the passive objects of scientific knowledge but the active producers of forms of knowledge that are essential to an adequate understanding of the phenomena being studied. The feminist postmodern critique of journalistic objectivity thus converges with the participatory journalism traditions discussed in earlier parts of this textbook, though it arrives at similar practical conclusions by a different theoretical route.

For the Bangladeshi student of science journalism, the feminist postmodern critique also requires engagement with the specific postcolonial dimensions of the knowledge politics involved. The science that Bangladeshi science journalism reports is overwhelmingly produced in the Global North, published in English-language journals, and organized by research agendas that reflect the priorities of Northern funders, Northern institutions, and Northern scientific communities. Even when that science concerns Bangladesh, as much of it does in the fields of climate change, public health, and development economics, the perspective from which it is organized is not primarily the perspective of the Bangladeshi people most affected by the phenomena being studied. The feminist postmodern challenge to science journalism in Bangladesh is thus simultaneously a feminist challenge and a postcolonial challenge: it asks whose knowledge is being communicated, in whose terms, for whose purposes, and with what consequences for the epistemological self-determination of the communities being described.

40.3 Feminist Empiricism and the Reform of Scientific Practice

Not all feminist philosophers of science have embraced the more radical epistemological positions of standpoint theory or feminist postmodernism. Helen Longino's feminist empiricism, developed in "Science as Social Knowledge" (1990) and "The Fate of Knowledge" (2002), argues that the appropriate feminist response to the androcentrism and sexism in scientific practice is not to abandon the criteria of empirical adequacy and logical consistency that define good science but to supplement them with explicit attention to the social and political assumptions that shape what questions get asked, what evidence is valued, and how results are interpreted.

Longino's approach has been called "social epistemology" as well as feminist empiricism, because her central argument is that the objectivity of scientific knowledge is not a property of individual inquirers but of communities of inquiry that include genuine diversity of perspective, active critical engagement among their members, and mechanisms for incorporating the results of criticism into subsequent research. This is an argument that has significant implications for both scientific practice and science journalism. For scientific practice, it means that diverse scientific communities, including communities that are more gender-diverse, more racially diverse, and more internationally diverse, will produce more objective knowledge than homogeneous ones. For science journalism, it means that the journalistic community that reports on science should itself be diverse if it is to produce journalism that captures the full complexity of the scientific knowledge it covers.

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Longino's framework is less philosophically radical than Haraway's or Harding's, and it is correspondingly more easily translated into policy recommendations. The argument that diverse scientific and journalistic communities produce better knowledge is one that can be advanced within the existing institutional framework without requiring the fundamental epistemological transformation that standpoint theory and feminist postmodernism demand. This makes it more politically tractable but less intellectually demanding. Part Five argues that both levels of the argument are necessary: the institutional reform that feminist empiricism supports is genuinely important, but it will be incomplete and ultimately unstable unless it is accompanied by the deeper epistemological transformation that the more radical feminist theories demand.

40.4 Intersectionality as an Epistemological and Political Framework

The concept of intersectionality, originally developed by legal theorist Kimberlé Crenshaw in her 1989 paper "Demarginalizing the Intersection of Race and Sex" and her 1991 paper "Mapping the Margins," has become one of the most important analytical frameworks in contemporary feminist theory and one of the most contested. Crenshaw's original argument was legal and political rather than epistemological: she observed that Black women in employment discrimination cases were often unable to seek legal redress because anti-discrimination law treated race and sex as separate categories, and Black women's distinctive situation at the intersection of racial and gender oppression fell through the analytical gaps between those categories.

The concept has been extended far beyond its original legal context to provide a general framework for understanding how multiple dimensions of social identity, including gender, race, class, religion, sexuality, disability, and national origin, interact to produce distinctive forms of privilege and oppression that cannot be adequately understood by examining any single dimension in isolation. For science journalism in Bangladesh, intersectionality is an essential analytical tool because the situation of women science journalists in Bangladesh is not adequately described by the category "woman" alone; it is shaped by the intersection of gender with class, religious identity, educational background, regional origin, linguistic background, and the specific configuration of political and economic power in the Bangladeshi context.

The intersection of gender and class, for instance, means that the experience of a woman from an elite urban family who has access to higher education, English language training, and the social networks of the Dhaka media establishment is radically different from the experience of a woman from a lower-middle-class family in a secondary city who enters journalism without access to those resources. Both face the gendered obstacles described in this part of the textbook, but they face them from very different positions and with very different resources for resistance. The analysis of gender and science journalism that ignores this class dimension will systematically underestimate the disadvantages facing the more marginalized group and overestimate the possibility of reform through measures that primarily benefit the already advantaged.

The intersection of gender and religion, in the specific Bangladeshi context of a predominantly Muslim society with significant Hindu, Buddhist, and Christian minorities and a political culture

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in which Islamist movements have gained significant influence, adds another layer of complexity. Muslim women journalists in Bangladesh face expectations and pressures around dress, mobility, professional interaction with men, and the appropriate domains of female professional activity that Hindu women journalists may not face in the same form, and that women from professional-class families with strong secular or liberal cultural commitments may experience differently from women from more conservative religious backgrounds. The rise of Hefazat-e-Islam and similar movements has, as research has documented, created specific constraints on the movement and professional activity of women journalists that have a direct impact on the kind of science journalism they are able to do.

The intersection of gender with the rural-urban divide, which is one of the most fundamental social divisions in Bangladesh, means that women journalists working outside Dhaka face challenges that urban women journalists do not, while also having access to forms of knowledge about rural Bangladesh that urban journalists, male or female, often lack. The science journalist in Rajshahi who covers the arsenic crisis in the northwest, or the journalist in Barishal who covers the climate crisis in the coastal south, is operating in a social environment where gender norms, mobility constraints, and professional support structures are quite different from those in Dhaka. The development of a genuinely national science journalism requires attention to these regional intersections in a way that most existing discussion of gender and journalism in Bangladesh has not provided.

40.5 The Emerging Concept of "Affective Epistemology" and Its Relevance to Science Journalism

The concept of affective epistemology, articulated in recent scholarship and gaining traction in journalism studies as of 2024 and 2025, provides one of the most potentially productive frameworks for rethinking science journalism from a perspective that integrates rather than opposes feminist and empiricist concerns. The core claim of affective epistemology, as developed by scholars working in the tradition of Feminist Standpoint Epistemology combined with philosophical, sociological, and anthropological theories of embodied knowledge, is that emotions and affects are not mere noise in the knowledge-production process but genuine sources of epistemic access to aspects of reality that purely cognitive, disembodied approaches cannot reach.

For the science journalist, this claim translates into a rethinking of the professional norm against "emotional journalism." The conventional view, still dominant in mainstream science journalism training, holds that the good journalist maintains emotional detachment from her subject matter, that the expression of emotion in journalism is a sign of bias rather than engagement, and that the appropriate relationship between the journalist and the communities she covers is one of professional distance rather than empathetic connection. This view has a long and influential history in journalism ethics, associated with the tradition of objectivity journalism that dominated professional discourse throughout the twentieth century.

The affective epistemology framework challenges this view not by abandoning the commitment to accuracy and evidence but by arguing that emotional engagement provides access to forms of

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knowledge that purely cognitive engagement cannot reach. The journalist who reports on the consequences of arsenic exposure in a rural community cannot fully understand what she is reporting on if she does not allow herself to be affected by the suffering she witnesses. Not in the sense of allowing that suffering to distort her assessment of the evidence, but in the sense of allowing it to direct her attention to dimensions of the situation that a purely cognitive, statistic-focused approach would miss: the specific patterns of social disruption that arsenic disease causes, the gendered distribution of its consequences within families and communities, the ways in which the disease interacts with existing social vulnerabilities to produce compound forms of harm.

This is particularly important for women science journalists in Bangladesh because the expectation of emotional detachment has historically been used as a criterion for judging women journalists as professionally inadequate: their emotional "excess" is contrasted with the masculine professional ideal of rational detachment. The affective epistemology framework reframes this critique entirely: what has been labeled as professional inadequacy may instead be epistemic access, and the professional culture that demands emotional detachment may be sacrificing knowledge in the service of a masculinist ideal of rationality that does not actually produce better journalism.

Chapter Forty-One: Historical Formation: Women in Bangladeshi Journalism from Colonial Bengal to the Post-2024 Transition

41.1 The Colonial Inheritance: Women's Writing, Women's Journalism, and the Bengali Reform Tradition

The participation of women in Bengali intellectual life, including journalism and science writing, has a history that predates the formal establishment of women's journalism as a recognized professional category. The nineteenth century Bengali renaissance, associated with figures like Ram Mohan Roy, Ishwar Chandra Vidyasagar, and the circle of reformers around the Brahmo Samaj, created a complex and contested space for women's intellectual and public participation that had lasting consequences for the development of journalism in the region.

The specific contribution of women to Bengali journalism in the nineteenth and early twentieth centuries has been largely written out of the standard histories of the press, which focus almost exclusively on male editors, proprietors, and journalists. This erasure is itself significant: it illustrates the way in which the historical record of journalism has been constructed through a gendered lens that renders women's contributions invisible by default. The recovery of women's contributions to the early Bengali press has been the work primarily of feminist historians and literary scholars rather than of journalism historians proper, and the result is that these contributions remain incompletely integrated into the standard accounts of Bangladeshi journalism history.

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Among the women who deserve recognition in the history of Bengali science communication is Begum Rokeya Sakhawat Hossain (1880-1932), whose work represents one of the most extraordinary and most underappreciated interventions in the history of South Asian science writing. Rokeya, born into a Muslim aristocratic family in Rangpur in what is now northern Bangladesh, was largely self-educated in Bengali and English against the active resistance of her family's conservative gender norms. Her 1905 satirical utopian story "Sultana's Dream," published in The Indian Ladies Magazine, imagined a world in which women had achieved mastery of science and technology and had organized a society based on scientific principles of reason and efficiency that eliminated the violence and inefficiency of the male-dominated order. This extraordinary piece of speculative fiction is simultaneously a feminist utopia, a critique of colonial scientific modernity, and an intervention in the early twentieth century debates about the relationship between Islam, science, and modernity that were shaping South Asian intellectual life.

Rokeya's work is relevant to the history of science journalism in Bangladesh not because she was a journalist in the professional sense, though she did write for newspapers and magazines throughout her life, but because she embodied a model of science communication that was simultaneously feminist, Muslim, and critical of the dominant paradigms of both colonial science and patriarchal tradition. She wrote about science, education, technology, and social reform for popular audiences in Bengali, precisely the kind of work that contemporary science journalism aspires to do, but she did so from a position that was explicitly located, explicitly critical, and explicitly oriented toward the liberation of women from the social constraints that denied them access to scientific knowledge and scientific culture. In this respect, she represents not an antecedent to modern science journalism but a model that contemporary science journalism has not yet fully caught up with.

The journals edited by women in the late nineteenth and early twentieth century, including Antahpur (1897-1905), edited by Sarala Devi Chaudhurani, and Bangamahila (1875-1876), edited by Krishnabhabini Das, published substantial amounts of content on science, health, hygiene, and technology alongside their more overtly literary and social reform content. These journals addressed topics ranging from the germ theory of disease to agricultural improvements, from hygiene education to the reform of domestic science, and they did so in a vernacular Bengali aimed at educated women readers rather than in the English of the colonial scientific establishment. This work constitutes an important and largely unrecognized tradition of vernacular science communication aimed at women audiences that is a direct precursor to contemporary Bangla science journalism.

41.2 Women Journalists in the Language Movement and the Liberation War

The language movement of 1952 and the Liberation War of 1971 are the two foundational events of Bangladeshi national identity, and both were extensively covered by journalists and writers who have been celebrated in the national historical memory. As with the broader history of the press, however, the gender dimensions of these historical moments have been incompletely documented. The journalist as national hero in the Bangladeshi historical imagination is almost

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invariably male, and the important role that women journalists and writers played in both the language movement and the liberation war has been recognized only partially and belatedly.

Women participated in the language movement not primarily as journalists but as students, teachers, and community members, and some of them wrote about these experiences in ways that constitute a form of witness journalism even if they were not recognized as such at the time. The documentation of the February 21 events, the police firing on language protesters at the University of Dhaka, and the subsequent mourning and resistance that gave the date its historic significance was carried out in part by women who wrote letters, diaries, and eventually published accounts that constitute important primary sources for the history of the movement.

The Liberation War of 1971 produced a specifically gendered form of historical trauma in the mass rape campaign conducted by the Pakistani military and its Razakar collaborators against Bengali women. This atrocity, which by most historical accounts involved several hundred thousand women and which was part of a deliberate military strategy of ethnic and national humiliation, was documented at the time primarily by male Bangladeshi journalists and foreign correspondents, and the women who survived it were more commonly objects of journalistic representation than subjects who produced their own accounts. The specific experience of covering or attempting to cover the sexual violence of the Liberation War as a woman journalist is almost completely undocumented, partly because so few women were working as journalists at the time and partly because the norms of the time made such coverage extraordinarily difficult for anyone, male or female.

The consequences of this gendered gap in the historical record have been lasting. The Liberation War has been the most intensely studied and most politically contested event in Bangladeshi history, but the study of the war's gendered dimensions, including both the experiences of women as victims of violence and the contributions of women as fighters, nurses, organizers, communicators, and journalists, has remained a secondary concern within the mainstream war historiography. This is itself a case study in the ways in which the gendered architecture of knowledge production shapes what gets known and what gets forgotten, what counts as history and what gets relegated to the margins.

The post-liberation period saw the founding of several women's organizations and the beginning of a more organized women's press in Bangladesh. The Women's Voluntary Association, the Bangladesh Mahila Parishad, and various other women's organizations began publishing newsletters and magazines that covered issues of concern to women, including health, nutrition, family planning, and education, all of which required some degree of science communication. These publications existed outside the mainstream press and were not recognized as journalism in the professional sense, but they constituted an important alternative tradition of science communication directed at and produced by women that deserves recognition in any complete history of Bangladeshi science journalism.

41.3 The NGO Revolution and the Transformation of Women's Science Communication

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The dramatic expansion of the NGO sector in Bangladesh from the 1970s onward, driven initially by the reconstruction needs of the post-Liberation War period and subsequently by the development model that emerged from the work of organizations like BRAC, Grameen Bank, and Proshika, created new institutional spaces for women's participation in public life that had significant, if indirect, consequences for women's science journalism. The NGO sector, which by the 1990s had become one of the largest and most innovative in the world, invested substantially in literacy education, health communication, agricultural extension, and environmental awareness for rural communities, and much of this work involved women both as communicators and as target audiences.

The communication materials produced by the NGO sector, including print materials, radio programs, videos, and later digital content, constitute an important and largely unstudied tradition of popular science communication in Bangladesh. These materials covered topics including oral rehydration therapy, family planning, agricultural techniques, water purification, vaccination, and environmental management, and they were frequently produced by women communicators for women audiences. The women who produced this material were not, for the most part, recognized as science journalists or science communicators in the professional sense, but they were doing work that is functionally equivalent to science journalism: translating scientific and technical knowledge into forms accessible to non-specialist audiences for the purpose of improving public health and well-being.

BRAC's approach to health communication, developed from the 1970s onward and eventually recognized as a global model, is particularly instructive. The organization developed a network of community health workers, the majority of them women, who served as the primary conduit between the formal biomedical health system and the rural communities that BRAC served. These health workers were not journalists, but they performed a function that science journalism at its best aspires to: they translated complex medical information into accessible, locally relevant terms; they identified gaps between official scientific recommendations and community knowledge and practice; they served as channels through which community concerns and locally generated knowledge could flow back to the formal health system. The gender dimension of this model was not incidental: the choice to work with women health workers reflected a specific theory of gendered knowledge and gendered community trust that is directly relevant to contemporary discussions of feminist science journalism.

The crisis of the mainstream press during the military period (1975-1990), during which political journalism was severely constrained but the NGO sector continued to expand, meant that much of the most innovative and socially important science communication in Bangladesh during this period was being produced outside the formal journalism sector entirely. The return to parliamentary democracy in 1990 opened new space for journalism, and the subsequent decade saw a significant expansion of the Bangladeshi press, including new attention to science and health reporting in the mainstream media. But the institutional and professional infrastructure for science journalism that had not been built during the military period could not be conjured overnight, and the NGO tradition of science communication and the mainstream journalism tradition of science reporting have remained in an uncomfortably separate relationship ever since.

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41.4 The Digital Era, Social Media, and the New Landscape for Women's Science Communication

The rapid diffusion of mobile phones and internet access in Bangladesh during the 2010s transformed the landscape for women's participation in journalism and science communication in ways that were simultaneously liberating and newly dangerous. The digital revolution created new possibilities for women to enter journalism outside the gatekeeping structures of the established print and broadcast media, through blogs, YouTube channels, Facebook pages, and later through the platforms of independent digital news organizations. It also created new channels for the harassment, abuse, and silencing of women who entered public discourse in any form, including journalism.

The opportunities dimension of the digital transformation for women science journalists in Bangladesh includes several distinct elements. The lower capital requirements of digital journalism compared to print journalism reduced one of the historic barriers to women's entry into media ownership and editorial control. The possibility of building a journalism audience directly through social media, without needing to be hired by an established newsroom with its gendered gatekeeping structures, created new pathways for women science communicators to reach audiences. The connectivity of the internet made it possible for women science journalists in secondary cities and rural areas to access the scientific literature, the expert networks, and the professional development resources that had previously been available only to journalists in Dhaka, reducing but not eliminating the geographic concentration of science journalism in the capital.

The dangers dimension is equally significant and has been extensively documented in recent research. A 2025 study published in Media Asia by Nishat Parvez of Jahangirnagar University on gendered misinformation and harassment on social media for female journalists in Bangladesh, drawing on YouTube comment analysis and semi-structured interviews, documented a systematic pattern of targeted attacks including sexual harassment and objectification, threats of violence, and coordinated campaigns designed to challenge women journalists' professional credibility and censure their voices. The study, received in March 2024 and published in July 2025, represents one of the most comprehensive empirical investigations of gendered online harassment in the Bangladeshi journalism context available, and its findings are discussed in detail in Chapter Forty-Three of this textbook.

The post-August 2024 period, following the fall of the Sheikh Hasina government and the installation of the Muhammad Yunus interim government, created a specific and complex new context for women science journalists. On the one hand, the political transition opened new space for journalism generally and appeared to offer the possibility of genuine media reform. The Bangladesh Media Reform Commission, whose work is discussed in detail in Part Four of this textbook, explicitly included gender equity in newsrooms and protection for women journalists from harassment as among its priorities. On the other hand, the political transition created new forms of insecurity and new sources of threat for women journalists specifically. Research by the Centre for Governance Studies and the Coalition for Women in Journalism documented that women journalists in Bangladesh in the post-August 2024 period faced

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increased risks from members of the public, including empowered extremist elements whose activities had been constrained under the previous regime, and that the interim government's failure to establish effective law and order in the transition period created a climate in which both journalists and women generally faced higher levels of street-level violence and harassment.

Chapter Forty-Two: The Lived Experience of Women Science Journalists in Bangladesh

42.1 Entry, Gatekeeping, and the Initial Architecture of Exclusion

The experience of entering the journalism profession in Bangladesh is, for women, systematically different from the experience for men, and these differences begin before the first job application. The social norms governing women's education, mobility, and professional aspiration in Bangladesh create a filter that reduces the pool of women considering journalism careers before any formal gatekeeping structures operate. The expectation, still prevalent in many Bangladeshi families including many middle-class families, that women will prioritize marriage and family over demanding professional careers, and that a career in journalism is particularly inappropriate for women because of its irregular hours, its requirement for mobility and sometimes physical exposure to dangerous situations, and its cultural association with a moral permissiveness that conservative families find troubling, means that many women who might make excellent journalists never consider it as a career option.

For those who do enter journalism, the formal gatekeeping structures of hiring and beat assignment produce further gender-specific filtering. Research on the composition of Bangladeshi newsrooms, including the estimates published by the Bangladesh NariSangbadhik Kendra and supplementary data collected by various research projects, suggests that women represent a significant minority of professional journalists in Bangladesh, with particularly severe underrepresentation in senior editorial positions, in the most politically influential news beats, and in newsroom leadership. The Bangladesh NariSangbadhik Kendra, the oldest women journalists' organization in Bangladesh, established in 2001, has documented over many years that while the absolute number of women in journalism has increased, they remain dramatically underrepresented relative to their share of the educated population, and their representation falls further at each level of seniority.

In the specific domain of science journalism, the situation is worse than in journalism generally. Science journalism is doubly gatekept by gender: it requires both entry into the journalism profession and access to the science beat, and women face barriers at both stages. The science beat in Bangladeshi journalism has historically been dominated by male journalists, partly because the universities and research institutions that are the primary sources for science journalism are themselves male-dominated in their senior ranks and in the culture of expert authority that shapes how science journalists interact with scientific sources, and partly because the specific topics that have historically been treated as "science" in mainstream journalism, including technology, physics, chemistry, and engineering, are fields in which women's participation has been most constrained by educational and cultural barriers.

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The women who do enter science journalism in Bangladesh most commonly do so through beats that are considered more appropriate for women: health journalism, environmental journalism, social science reporting, and development reporting. These beats are not necessarily less important than the more traditionally "scientific" beats of technology and engineering, and they may in fact be more directly relevant to the lives of most Bangladeshis. But they are treated as less prestigious within the professional culture of journalism, they receive fewer resources, they provide less access to the centers of institutional power, and they tend to lead to career paths that are less likely to reach the editorial senior positions that would allow women to reshape the priorities and practices of journalism organizations from the inside.

The specific experience of women who have attempted to cover beats traditionally dominated by male journalists in Bangladesh, including investigative coverage of pharmaceutical companies, environmental investigations of the garment industry, and critical coverage of government agricultural policy, illustrates both the possibilities and the resistance that such attempts generate. Interviews with senior women journalists in Bangladesh, including those whose accounts appear in the reports of the United Nations Women initiative and the Coalition for Women in Journalism, consistently describe experiences of being dismissed or undermined by male sources who question women journalists' competence to cover technical subjects, of editorial decisions that reassign stories in which women journalists have invested significant research effort to male colleagues at the point where the story becomes controversial or high-profile, and of informal newsroom cultures in which women's contributions to scientific coverage are subtly devalued through condescension, interruption, and the attribution of credit to male colleagues.

42.2 The Beat Assignment Problem and the Hierarchy of Scientific Authority

The gendered distribution of beat assignments in Bangladeshi science journalism represents one of the most structurally consequential forms of gender discrimination in the profession. Beats are not merely administrative assignments; they are the organizational units through which journalists develop expertise, build source networks, gain institutional recognition, and establish the professional reputation that determines their career trajectory. The journalist who covers the pharmaceutical beat for five years develops a depth of knowledge about pharmaceutical science, regulation, and industry that cannot be acquired in any other way; the same journalist who is assigned to cover community health, however important that beat may be, develops a different and in many ways complementary expertise, but one that the institutional culture of journalism values less. The systematic assignment of women to the less prestigious science beats is thus not merely a question of immediate working conditions but a mechanism for reproducing the gendered hierarchy of scientific authority within the profession.

The beat assignment problem in Bangladeshi science journalism reflects and reinforces the gendered hierarchy of the scientific community itself. The senior scientists at the Bangladesh Council of Scientific and Industrial Research, the Bangladesh Atomic Energy Commission, and the major national universities are overwhelmingly male, and the culture of expert authority that operates in these institutions is correspondingly masculinized. Women science journalists who approach these institutions for information and interviews often report encountering forms of institutional condescension that would not be directed at male colleagues: patronizing

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explanations, assumptions of technical incompetence, and in some cases outright refusal to take the inquiry seriously. The male science journalist who encounters resistance from male scientific authorities has more institutional resources for overcoming that resistance than the woman who encounters it, because the institutional culture from which both draw authority is one that extends more legitimacy to male journalists in relation to male scientific authorities.

The particular difficulty of covering the intersection of science and religion in Bangladesh adds a further gendered dimension to the beat assignment problem. Bangladesh has a rich and complex tradition of Islamic scientific learning, and the relationship between Islamic scholarship and modern scientific knowledge is a subject of active intellectual debate in the country. Coverage of this relationship, including coverage of fatwa debates about medical procedures, of the role of madrasa education in producing scientifically literate citizens, and of the tensions between Islamist political movements and the scientific research agenda, requires both scientific literacy and cultural sensitivity that is difficult for any journalist to combine. For women journalists, this coverage carries additional risks because the very act of a woman journalist engaging with male Islamic scholars on topics that touch on the authority of religious knowledge is itself potentially controversial in ways that similar engagement by a male journalist would not be.

42.3 Patriarchal Newsroom Culture: The Invisible Architecture

The concept of patriarchal newsroom culture, while widely used in gender and journalism research, requires specific elaboration in the Bangladeshi context where patriarchy intersects with specific configurations of class, religious conservatism, and organizational culture that shape how it manifests in practice. The most important point about patriarchal newsroom culture is that it is not primarily maintained through explicit discrimination, though explicit discrimination certainly occurs, but through the accumulated weight of informal norms, unspoken expectations, and habitual practices that make the newsroom feel comfortable and natural for men and uncomfortable and foreign for women.

These informal norms include the timing and organization of newsroom social life, which tends to occur after working hours in places, including restaurants, tea shops, and occasionally the kinds of all-male gathering places that remain common in Bangladeshi urban culture, where women's presence is awkward or unwelcome; the patterns of editorial discussion in which male journalists' contributions are naturally heard as authoritative and women's contributions are more likely to be questioned or ignored; the language and humor of newsroom culture that often involves forms of gender-based commentary that create a hostile or uncomfortable environment for women; and the expectation that women journalists will perform particular forms of self-presentation and social interaction that are simultaneously more constrained than those expected of men and subject to more intense scrutiny and commentary.

Sushmita S. Preetha, the senior journalist at The Daily Star who read out a feminist media manifesto at the United Nations Asia-Pacific headquarters in Bangkok in November 2024, has articulated with particular clarity the specific form that patriarchal newsroom culture takes in Bangladesh. Her observation that feminist storytelling is a form of resistance, that whose story gets told and whose gets erased has always been deeply political, captures something essential

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about the relationship between newsroom culture and the content of journalism. The stories that women journalists are positioned to tell, by their beat assignments, their source networks, their editorial relationships, and their sense of what is possible to say within the specific constraints of their newsrooms, are shaped by the gendered architecture of the newsroom in ways that have direct consequences for the quality and completeness of the science journalism that reaches the public.

The experience of covering the August 2024 student uprising in Bangladesh illustrates these dynamics with particular clarity. The uprising, which led to the fall of the Sheikh Hasina government after fifteen years of increasingly authoritarian rule, was primarily led by young people including many young women, and it involved significant numbers of women journalists covering events on the ground. The Coalition for Women in Journalism documented that women journalists covering the protests faced specific gendered risks that their male colleagues did not, including sexual violence and targeted threats from security forces; and research conducted in the period after the uprising found that while women journalists had been present and active in covering the events, their contributions were less prominently credited in the subsequent journalistic accounts than those of male colleagues. This pattern, in which women's journalistic labor is present but not recognized, is itself a form of the gendered architecture of knowledge this chapter is examining.

42.4 The Double Standard of Credibility and the "Femme Expertise" Problem

One of the most persistently documented features of women's experience in science journalism across multiple national contexts is what researchers have called the "credibility double standard": the phenomenon in which women science journalists must demonstrate a higher level of technical competence than their male colleagues in order to be treated as credible by the same scientific sources and the same editorial gatekeepers. This double standard operates through a complex of mechanisms that are rarely explicit but are widely experienced.

For women science journalists, the credibility double standard in the Bangladeshi context is shaped by several intersecting factors. The first is the perception of women as naturally less suited to the technical, rational, and objective orientation that the dominant transmission model of science journalism values. This perception is rarely stated explicitly in contemporary professional discourse, but it operates through the informal evaluation of women's work as "emotionally" driven, through the greater scrutiny applied to women's factual claims than to men's, and through the tendency to attribute women journalists' professional success to personal connections or luck rather than to expertise. The second factor is the double bind in which women science journalists find themselves regarding the performance of expertise: they must be sufficiently authoritative to be taken seriously as science journalists, but not so authoritative as to be perceived as aggressive, unfeminine, or threatening to the male scientists and male editors with whom they interact. The navigation of this double bind requires forms of emotional labor that are invisible in the professional accounting of journalism work but that constitute a significant additional burden on women professionals.

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The "femme expertise" problem, a term used by some researchers to describe the devaluation of women's knowledge as inherently softer, more personal, and less rigorous than men's knowledge, has specific manifestations in the science journalism context. Women science journalists in Bangladesh who cover health and medicine, the beat where women are most represented, consistently report that their reporting is evaluated against different standards than that of their male colleagues: it is expected to be more "human interest" oriented, more focused on individual stories rather than systemic analysis, and less likely to involve the kind of complex statistical and institutional analysis that is treated as the hallmark of serious science reporting. This expectation both reflects and reinforces the gendered hierarchy of scientific authority: it assumes that women are better suited to the emotional and narrative dimensions of science communication and less suited to its analytical and technical dimensions, and by directing women toward the former, it makes it harder for them to develop the skills and reputation associated with the latter.

42.5 Women Science Journalists Speaking: Testimony, Resistance, and the Politics of Voice

The most important source of knowledge about women's experiences in science journalism is the testimony of women who practice it, and any serious engagement with this topic requires sustained attention to what women science journalists have actually said about their own experiences. This section draws on the testimonies available through published interviews, research papers, organizational reports, and journalistic accounts, recognizing that these testimonies themselves are shaped by the conditions under which they were produced and that the women who speak publicly about their professional experiences are necessarily a selection from the larger population of women science journalists, weighted toward those who have achieved sufficient institutional security to speak without immediate professional risk.

Banani Mallick, a journalist who participated in the "Women Journalists Journal: Stories of Gender Justice from Women Journalists across the Asia-Pacific" initiative co-led by UN Women and the OHCHR, has described with unusual candor the specific forms of exclusion and degradation she has witnessed in the Bangladeshi journalism profession. Her observation that empowering women at the top level alone will not address the deprivations that she has witnessed and endured points to something structurally important: that the institutional reforms most commonly proposed, including quotas for women in senior editorial positions and mentorship programs for women journalists, address symptoms rather than causes, and that the causes are embedded in the professional culture and the broader social structure in ways that require more fundamental change.

Nadia Sharmin, a senior correspondent of ETV News, has articulated the specific paradox of the electronic media environment for women journalists: the expansion of electronic media has created more positions for women journalists, but these positions are frequently defined by the visual dimension of television journalism in ways that subject women journalists to forms of objectification and evaluation that have nothing to do with their journalistic competence. The expectation that women television journalists will conform to particular standards of appearance and presentation, and the treatment of women journalists' appearance as a legitimate subject of comment and evaluation in a way that men's appearance is not, represents a specific form of the double standard of credibility that is particularly pronounced in broadcast media.

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Chapter Forty-Three: Gendered Online Harassment, Digital Violence, and the Architecture of Silencing

43.1 The Architecture of Online Misogyny: Theoretical Frameworks

The phenomenon of gendered online harassment against women journalists has attracted increasing scholarly and policy attention since the mid-2010s, and by 2024 and 2025 there exists a substantial body of research, policy documentation, and practitioner testimony that makes it possible to analyze the phenomenon with some precision. Understanding this research is essential for the Bangladeshi science journalist because the digital environment is not a peripheral feature of contemporary journalism but its primary operating environment, and the gendered threats specific to that environment are not incidental but structural.

The theoretical framework most commonly used to analyze gendered online harassment is a combination of gender studies and platform studies: it analyzes online misogyny not as a collection of individual bad behaviors but as a structural phenomenon produced by the intersection of patriarchal culture with the specific incentive structures, algorithmic logics, and affordances of digital communication platforms. This framework, associated with researchers including Kate Manne, Whitney Phillips, and Ryan Milner, among others, treats online harassment not as an aberration but as the digital expression of what Manne calls "himpathy," the deep cultural tendency to explain and excuse men's violence against women by reference to men's frustrations, entitlements, and wounded pride, and to treat women's experience of that violence as less important than men's emotional states.

In the journalism context, this theoretical framework has been applied most comprehensively in the UNESCO global survey of 714 women journalists that found 73 percent report experiencing online violence, 25 percent have received threats of physical violence, and 13 percent have received threats against those close to them including their children. This survey, conducted across multiple countries and professional contexts, provides the statistical foundation for understanding the scale of the phenomenon, but it does not capture the specific forms that online harassment takes in the Bangladeshi context, which are shaped by the specific intersection of Bangladeshi gender politics, religious culture, and digital culture.

Platform architecture plays a critical role in enabling and amplifying gendered harassment. Social media platforms including Facebook, which is by far the most dominant social media platform in Bangladesh, are designed to maximize engagement, which means they are designed to amplify content that produces strong emotional responses. Content designed to provoke, to humiliate, or to threaten produces exactly the kind of strong emotional response that platform algorithms amplify, and the result is that harassment campaigns against women journalists on Facebook can achieve reach and impact far exceeding what individual harassers could produce without the platform's amplification. This is not an accident of platform design but a structural feature of the attention economy in which platforms operate: harassment is profitable for

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platforms because it generates engagement, and the harm it causes falls on women journalists rather than on the platforms that benefit from it.

The specific vulnerabilities of women science journalists to online harassment, as compared to women journalists generally, are worth examining. Science journalism typically involves the communication of claims that have practical and sometimes contested implications for people's lives, including information about vaccine safety, about the environmental consequences of industrial activities, about the nutritional claims of food products, and about the health consequences of behaviors and practices that people may be emotionally invested in. This content makes science journalists particularly attractive targets for coordinated harassment from organized groups, including anti-vaccination activists, climate change deniers, and religious groups that reject particular scientific findings. These organized harassment campaigns are often not explicitly misogynist in their stated motivation, but research consistently shows that they deploy misogynist tactics specifically against women journalists, including sexual threats and humiliation, that are not deployed against male journalists covering the same content.

43.2 Bangladesh-Specific Patterns of Gendered Digital Violence

The specific patterns of gendered digital violence against women journalists in Bangladesh have been studied with increasing precision since 2020, and the findings of Nishat Parvez's 2025 Media Asia study, along with earlier research by the Centre for Governance Studies and the International Federation of Journalists, provide a relatively detailed picture of what women journalists in Bangladesh actually face in the digital environment.

The most distinctive feature of gendered online harassment in the Bangladeshi context, as compared to the international literature, is the degree to which it incorporates specifically religious framing. Women journalists who cover stories that touch on Islamic practice, on the activities of Islamist political movements, or on the relationship between religious authority and scientific or government institutions are particularly likely to face harassment campaigns that describe them as sinful, as agents of Western anti-Islamic forces, or as bad Muslims who have departed from appropriate female roles. This religious framing of harassment is not unique to Bangladesh, but it takes specific forms in the Bangladeshi context that reflect the specific dynamics of Islamist politics in the country following the August 2024 political transition.

The political transition of August 2024 created conditions that initially appeared more favorable for women journalists and press freedom generally, but that in practice created new forms of risk alongside the old ones. The removal of the Sheikh Hasina government eliminated one major source of political harassment, particularly for journalists associated with or sympathetic to the opposition, but it also removed the constraints that had, somewhat paradoxically, limited the public activities of certain extremist groups. Research by the Centre for Governance Studies found that women journalists in the post-August 2024 period reported increased risks from members of the public, including empowered extremist elements, and that attacks on women in public spaces in Dhaka and other cities created a climate of generalized threat that affected women journalists' ability to do their jobs on the ground.

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The specific case of science journalists covering politically sensitive scientific topics illustrates the compound nature of these threats. A woman journalist covering the environmental consequences of illegal sand extraction from rivers in northern Bangladesh faces threats from the politically connected business interests that profit from sand extraction, threats from local authorities who have been corrupted by those interests, and gendered threats based on her identity as a woman who is being perceived as overstepping appropriate female boundaries by challenging male economic and political power. These different categories of threat are not neatly separable; they interact and reinforce each other, and the experience of facing them simultaneously, without adequate institutional support or legal protection, is a form of compound vulnerability that makes the already demanding work of investigative science journalism nearly impossible to sustain.

The digital dimension of these threats is particularly concerning because it operates 24 hours a day, penetrating the supposedly private spaces of the journalist's home and family life that in the pre-digital era had provided some refuge from professional harassment. Women journalists who receive threats on their phones while at home with their children, who find that their personal information including home addresses and family members' contact details has been circulated by harassers on social media, or who receive unsolicited violent and sexually explicit material at any hour of the day or night, cannot maintain the clear boundary between professional and personal life that was already difficult but at least theoretically possible in an earlier media environment. The 24-hour digital accessibility that makes modern journalism possible is the same feature that makes digital harassment so comprehensively invasive.

43.3 Legal Responses to Gendered Online Harassment and Their Inadequacy

The legal framework for addressing gendered online harassment in Bangladesh is a complex and frequently contested terrain, and the student of science journalism must understand it in some detail because it directly affects the professional conditions of women science journalists. The primary legal instruments relevant to online harassment of journalists in Bangladesh include the Digital Security Act 2018, which was replaced by the Cyber Security Act 2023, and provisions of the Penal Code, the Information and Communication Technology Act, and various other statutes that have been applied to online content.

The fundamental problem with the Bangladeshi legal response to gendered online harassment of journalists is not that no legal provisions exist but that the existing provisions are simultaneously over-inclusive in ways that threaten legitimate journalism and under-inclusive in ways that fail to protect journalists from harassment. The Digital Security Act and its successor the Cyber Security Act, which are discussed in detail in Part Two of this textbook, have been used far more frequently to prosecute journalists for reporting that powerful interests find inconvenient than to protect journalists from the organized harassment campaigns that prevent women from practicing journalism. This asymmetry in the application of law is not accidental: it reflects the specific configuration of political and institutional power in Bangladesh, in which state and quasi-state actors have both the motivation and the means to weaponize legal processes against critical journalism, while the individuals and groups who conduct organized harassment campaigns

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against women journalists have the protection of informal political networks that insulate them from legal accountability.

The gender-specific provisions of Bangladeshi law that might be relevant to the harassment of women journalists include the Prevention of Violence Against Women and Children Act 2000, the Pornography Control Act 2012, and the specific provisions of the Cyber Security Act that address sexual harassment and threats of violence online. In principle, these provisions create a legal basis for prosecuting the most severe forms of gendered harassment, including threats of sexual violence and the non-consensual distribution of intimate images. In practice, women journalists who attempt to use these provisions encounter a combination of institutional barriers, including police reluctance to register complaints from women who report online harassment, prosecutorial skepticism about the severity of online threats, and the practical difficulty of establishing the legal identity of anonymous or pseudonymous harassers, that makes effective legal redress extremely difficult to obtain.

The Bangladesh Media Reform Commission, established under the interim government, included attention to the protection of women journalists from harassment among its priorities, and its recommendations addressed both the reform of existing legal provisions and the creation of new institutional mechanisms for supporting journalists facing harassment. If these recommendations are implemented, they would represent a significant improvement in the legal and institutional environment for women journalists. The record of previous reform initiatives in Bangladesh, however, counsels a careful skepticism about whether recommendations will be translated into effective institutional change.

The jurisprudential analysis of gender-based violence in the digital context requires engagement with the broader theoretical framework of how the law conceptualizes gendered harm. The traditional criminal law framework, which is organized around physical harm and property harm as the paradigmatic forms of legally cognizable injury, has difficulty accommodating the specific forms of harm that online harassment produces, including psychological harm, professional harm through the silencing of journalistic activity, and the compound harm that results from the intersection of online harassment with offline threats. The feminist jurisprudential tradition, associated with scholars like Catharine MacKinnon, Martha Nussbaum, and Nicola Lacey, has developed frameworks for understanding these forms of harm as legally cognizable injuries deserving of legal redress, and these frameworks have been increasingly influential in international human rights law even if they have not yet been fully incorporated into Bangladeshi domestic law.

The specific claim that harassment designed to silence women journalists constitutes a violation of freedom of expression, not merely an exercise of it, is one that has been advanced by international human rights organizations including Article 19 and the International Federation of Journalists and that has been recognized in principle by international bodies including the UN Human Rights Council. The logic of this argument is straightforward: if the functional effect of organized harassment campaigns is to prevent women journalists from exercising their professional freedom to report on matters of public importance, then the harassment constitutes a violation of press freedom, and the state's failure to protect journalists from harassment is itself a

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violation of the state's positive obligations under international human rights law. This argument has important implications for how Bangladesh's legal and regulatory framework should be reformed, and it is one that Bangladeshi legal scholars and policy advocates have not yet fully engaged with in the specific context of science journalism.

43.4 Institutional Responses and Their Limitations

The institutional responses to gendered online harassment against women journalists in Bangladesh have been generated by a combination of media organizations, professional associations, international organizations, and civil society groups, and they have varied considerably in their depth, their reach, and their effectiveness. The most concrete and the most potentially transformative of the recent institutional responses is the Gender Charter of Commitments for News Media, an initiative that by November 2025 had engaged over twenty Bangladeshi newsrooms and that was described as a major development in the effort to make Bangladesh's media sector a safer working environment and a place from which women's and men's realities are portrayed equally.

The Gender Charter initiative, supported by the Swedish embassy and other international partners, represents an approach to institutional reform that works through voluntary commitment and organizational culture change rather than through legal mandate. This approach has both advantages and limitations. Its advantages include the ability to move faster than the legislative process, the capacity to generate genuine institutional commitment rather than mere formal compliance, and the flexibility to adapt to the specific contexts of different news organizations. Its limitations include the voluntary nature of the commitments, which means that organizations with the weakest commitment to gender equity are the least likely to participate; the absence of enforceable accountability mechanisms, which makes it difficult to ensure that commitments are translated into actual practice; and the potential for the charter to function as a form of institutional reputation management that does not require the deeper cultural change that the problem requires.

The international dimension of institutional support for women journalists in Bangladesh has been significant, with organizations including UNESCO, the International Federation of Journalists, UN Women, and the Coalition for Women in Journalism all conducting research, publishing reports, and running training programs that address the specific situation of Bangladeshi women journalists. This international attention brings resources, frameworks, and advocacy that can support local reformers, but it also carries risks associated with the imposition of frameworks developed in very different national and cultural contexts. The feminist journalist in Bangladesh who must navigate both the patriarchal norms of her local newsroom culture and the expectations of international organizations with their own agendas and assumptions about what women's empowerment means is in a complex position that requires careful critical analysis of both sets of expectations.

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Chapter Forty-Four: Constitutional Frameworks, International Human Rights Law, and the Jurisprudential Analysis of Gender Equity in Science Journalism

44.1 The Constitutional Architecture of Gender Rights in Bangladesh

The Constitution of Bangladesh provides a formally impressive set of provisions relevant to gender equality in journalism and science communication. Article 27 guarantees equality before the law and equal protection of the law for all citizens, without discrimination on grounds of religion, race, caste, sex, or place of birth. Article 28 prohibits discrimination against any citizen on the grounds of religion, race, caste, sex, or place of birth, and Article 28(2) specifically prohibits the state from discriminating against any citizen on grounds of sex. Article 28(4) permits the state to make special provisions for the advancement of women or children, providing constitutional authorization for affirmative measures in favor of women journalists. Article 29 guarantees equality of opportunity in public employment, including the positions in state-owned media organizations and regulatory bodies that are relevant to journalism.

The gap between these formal constitutional provisions and the actual experience of women journalists in Bangladesh is one of the most significant jurisprudential phenomena in the country's constitutional history. This gap is not primarily the result of constitutional deficiency, though constitutional provisions are not a sufficient mechanism for achieving gender equality, but of the structural conditions that prevent formal legal rights from translating into substantive equality in practice. These structural conditions include the weak enforcement capacity of the state, the corruption of many of the institutional mechanisms that should implement constitutional rights, the specific configuration of political power that has historically protected media owners and editors from accountability for discriminatory practices, and the cultural and social norms that shape what journalists, editors, and media consumers expect from women in journalism.

The jurisprudential analysis of the gap between formal constitutional equality and substantive equality in the media sector draws on a rich tradition of constitutional theory including both liberal equality jurisprudence and critical legal scholarship. The liberal tradition of equality jurisprudence, associated in the Bangladeshi constitutional context with the influence of the Indian Supreme Court's equality jurisprudence, tends to focus on the elimination of formal discrimination: the removal of legal rules that explicitly discriminate on grounds of sex, and the establishment of mechanisms for challenging formal discrimination when it occurs. This approach has been important and has produced genuine advances, but it is insufficient to address the forms of informal, structural, and cultural discrimination that are the most significant barriers to women's full participation in science journalism.

The critical legal scholarship tradition, drawing on feminist jurisprudence and critical race theory, argues that the formal equality approach is inadequate because it treats the existing social structure as a neutral baseline and defines discrimination as deviation from that baseline, rather than recognizing that the existing structure is itself the product of historical discrimination and continues to reproduce inequality even in the absence of formally discriminatory rules. This is a distinction with fundamental practical importance: if the formal equality approach is adopted, the

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remedy for discrimination is the removal of discriminatory rules, and if no such rules exist, there is no discrimination to remedy. If the substantive equality approach is adopted, the question is whether existing institutional arrangements and cultural norms produce equal outcomes for women and men, and if they do not, the state has an obligation to address the causes of the inequality even if no formal discriminatory rule can be identified.

The substantive equality approach has been increasingly recognized in international human rights law, particularly through the jurisprudence of the CEDAW Committee, and the Bangladesh government has accepted obligations under CEDAW and its Optional Protocol that go beyond the formal equality guarantees of the domestic Constitution. The translation of these international obligations into domestic legal and policy reform is a process that has been fitful, contested, and significantly incomplete, but it provides an important legal foundation for advocacy around gender equity in journalism.

44.2 CEDAW, the Beijing Platform for Action, and International Human Rights Obligations

The Convention on the Elimination of All Forms of Discrimination Against Women, to which Bangladesh acceded in 1984, is the most comprehensive international instrument addressing gender discrimination, and its relevance to science journalism and media freedom may not be immediately obvious but is nonetheless real and important. CEDAW's broad prohibition on discrimination against women "in all fields" (Article 1) includes discrimination in the professional field of journalism, and the CEDAW Committee's General Recommendation No. 33 on women's access to justice is relevant to women journalists' access to legal redress for discrimination and harassment.

The Beijing Platform for Action, adopted at the Fourth World Conference on Women in 1995 and reaffirmed at its successive five-year reviews including the most recent review in which the Bangladeshi journalist Sushmita S. Preetha participated in Bangkok in November 2024, includes specific sections on women and the media and on women and science and technology. Section J of the Platform for Action calls for states to take measures to ensure women's equal access to, and full participation in, power structures and decision-making; in the media context, this includes measures to ensure that women are equally represented in the editorial and leadership positions that determine the priorities and practices of news organizations. The 2024 Bangkok meeting's affirmation of the Beijing Platform, and the specific feminist media manifesto read out there, represents a significant international commitment to the goals that this chapter of the textbook is arguing for, and Bangladeshi journalism reformers can draw on this international framework to support domestic advocacy.

The thirty-year review of the Beijing Platform in 2025 provides an important reference point for assessing Bangladesh's progress toward gender equity in journalism. The specific areas in which progress has been measured include the proportion of women in news media leadership positions, the existence of legal and institutional protections against sexual harassment in newsrooms, the coverage of women's issues and perspectives in news content, and the protection of women journalists from violence and harassment in both online and offline environments.

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Bangladesh's record on all of these indicators, as assessed by international monitoring organizations, reflects modest progress in some areas but continued and serious deficiencies in others.

The international human rights framework, while not directly enforceable in Bangladeshi courts in most circumstances, provides important normative resources for domestic advocacy and for the articulation of claims against the state and against media organizations. The journalist who understands that Bangladesh's treatment of women in journalism can be measured against international standards and found significantly wanting is in a stronger position to advocate for change than one who treats the existing situation as simply the way things are. This is why the international human rights framework should be a standard part of the education of science journalists in Bangladesh, not merely as a matter of professional knowledge but as a resource for professional self-understanding and advocacy.

44.3 The Media Reform Commission's Gender Recommendations: Promise, Implementation, and Gaps

The Bangladesh Media Reform Commission's recommendations on gender, published as part of the Commission's broader report on media reform in the post-August 2024 period, represent the most significant domestic policy statement on gender equity in journalism in Bangladesh's history. The recommendations address several distinct areas: the representation of women in newsrooms and in editorial leadership positions; the legal and institutional protection of women journalists from harassment and violence; the content of journalism as it relates to the representation of women and women's perspectives; and the specific vulnerabilities of women journalists in the digital environment.

The Commission's recommendations on newsroom representation include calls for media organizations to adopt voluntary targets for women's representation at different levels of seniority, to develop and publish data on the gender composition of their workforces, and to create internal mechanisms for addressing complaints of gender discrimination. These recommendations are modest in the sense that they rely on voluntary action rather than legal mandate, but they represent an important acknowledgment that the gender composition of newsrooms is a matter of public policy concern rather than purely a private matter for media organizations to manage as they see fit.

The Commission's recommendations on harassment and violence are more potentially significant, calling for the reform of the legal framework to provide more effective protection for women journalists from both online and offline harassment, the creation of a dedicated legal assistance mechanism for journalists facing harassment, and the development of partnerships between media organizations and law enforcement agencies to improve the responsiveness of the justice system to complaints by journalists facing harassment. The implementation of these recommendations would require both legal reform and significant changes in the institutional culture of law enforcement, both of which are demanding and uncertain processes.

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The gap between the Commission's recommendations and what is actually needed for a genuine transformation of gender relations in Bangladeshi journalism is significant and must be acknowledged. The recommendations, shaped by the political constraints of the immediate post-transition environment, are largely technical and institutional in character: they address discrimination and harassment as problems to be managed through better institutional design, rather than as symptoms of deeper structural conditions that require more fundamental transformation. The feminist critique of institutional reform is not that such reforms are unimportant but that they are insufficient on their own: that the real barriers to women's full participation in science journalism are not primarily institutional but cultural, social, and epistemological, and that transforming institutional arrangements without transforming the underlying cultural and epistemological frameworks will produce formal change without substantive change.

Chapter Forty-Five: Feminist Science Studies and the Practice of Science Journalism

45.1 The Feminist Critique of Science as an Institution

The feminist critique of science as an institution is one of the most intellectually productive intellectual developments of the late twentieth century, and it is one that science journalists in Bangladesh have not yet sufficiently engaged with. This critique, associated with scholars including Sandra Harding, Evelyn Fox Keller, Anne Fausto-Sterling, Donna Haraway, Ruth Bleier, and many others, does not argue that the natural world is different for women than for men, or that the laws of physics or chemistry are culturally variable in the obvious sense. What it argues, rather, is that scientific institutions, scientific practice, and the cultural meanings of science are all shaped by gender in ways that systematically influence which questions get asked, which methods get used, whose evidence gets credited, and how results get interpreted and applied.

The most immediately relevant dimension of this critique for science journalism is the insight about which questions get asked. The research agenda of any scientific field is not determined purely by the internal logic of scientific inquiry; it is shaped by the interests of funders, the priorities of research institutions, the career incentives of scientists, and the cultural assumptions of the scientific community about what is important and what is not. When that scientific community is overwhelmingly male, and when it operates within institutions that have historically been organized around masculine norms and masculine interests, the result is a research agenda that systematically underinvests in questions most directly relevant to women's lives and health.

The history of cardiovascular medicine provides one of the best-documented examples. For decades, heart disease research was conducted primarily in male populations, on the assumption that the findings would be generalizable to women, and the result was a systematic gap in knowledge about how heart disease presents, progresses, and responds to treatment differently in women than in men. This gap had direct health consequences for women, who were less likely

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than men to be correctly diagnosed with heart disease and who were treated with protocols developed for male bodies. The feminist critique of cardiovascular medicine did not require any claim about the non-objectivity of chemistry or physiology; it required only the recognition that the choice of research subjects is itself a scientific decision with political and social dimensions, and that a research program that systematically excludes women from study cannot produce knowledge that adequately represents women's reality.

In the Bangladeshi context, the feminist critique of the research agenda has particular urgency in several scientific fields. The research on occupational disease and chemical exposure in the garment industry has historically focused on the most immediately economically significant questions, such as fire safety and structural integrity of buildings, while systematically underinvesting in research on the long-term health consequences of chemical exposure for female workers. The research on reproductive health and maternal mortality in Bangladesh has progressed significantly, but the research on the non-reproductive health of women, including mental health, occupational health, and the health consequences of the double burden of paid and domestic labor, remains underdeveloped relative to the scale of the problems it needs to address.

The science journalist who understands the feminist critique of scientific research agendas is equipped to ask different questions of the scientific literature than the journalist who treats published research as simply the authoritative account of what is known. She is alert to the question of whose experiences have been studied and whose have been ignored; she is skeptical of generalizations from all-male or predominantly male samples to all humans; she asks how findings might be different if research had started from the standpoint of women rather than men; and she is attentive to the gap between what has been scientifically demonstrated and what has been assumed on the basis of cultural norms that were not subjected to scientific scrutiny.

45.2 Gendered Sourcing Patterns in Bangladeshi Science Journalism

One of the most straightforwardly measurable dimensions of gendered science journalism is the sourcing pattern: who is quoted as a scientific authority in science journalism, and how does the gender distribution of scientific sources reflect and reinforce the gendered hierarchy of scientific authority? Research on sourcing patterns in science journalism internationally has consistently found that women are significantly underrepresented among quoted experts, even in fields where women scientists are relatively well represented, and that the underrepresentation is most severe in the most prestigious and most heavily covered fields.

In the Bangladeshi context, the gendered sourcing pattern in science journalism is shaped by both the gender composition of the scientific community and the journalistic practices of source selection. The scientific community in Bangladesh is itself significantly male-dominated at the level of seniority and institutional authority that determines who gets treated as a quotable expert. The senior scientists at the major research institutions, the professors at the leading universities, and the senior officials at government scientific agencies are overwhelmingly male, and the journalism practice of treating institutional seniority as the primary criterion for expert status means that the gendered hierarchy of the scientific community is directly reproduced in the sourcing patterns of science journalism.

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The problem is compounded by the specific dynamics of source cultivation in Bangladeshi journalism, where informal relationships built through shared professional networks, shared educational backgrounds, and shared social spaces are critical determinants of which scientists journalists know and trust as sources. The informal professional networks through which these relationships are built have historically been structured to include men more easily than women, partly because the social spaces in which professional relationships are built in Bangladesh are often male-dominated or male-preferential, and partly because the accumulation of informal authority and recognition that makes a scientist attractive as a source is itself a gendered process in which men are more likely to be recognized as authoritative regardless of the actual quality of their expertise.

The practical implication for science journalism practice is that the improvement of gendered sourcing patterns requires more than a simple commitment to quote more women; it requires the development of new approaches to source cultivation that deliberately seek out women scientists whose expertise is underrepresented in existing source networks, new evaluation criteria for expert authority that do not simply replicate the existing hierarchy, and a critical awareness of the ways in which the existing source hierarchy reproduces the exclusions of the scientific community itself. The Global Expert Women network and similar initiatives that work to make women scientists more visible as potential sources for journalists represent one practical approach to this problem, but they are effective only to the extent that journalists actively use and value them rather than defaulting to the familiar source networks that they already have.

45.3 Feminist Research Methods and Their Application to Science Journalism

The feminist research tradition within the social sciences has developed a range of methodological approaches that have important implications for how science journalism is practiced. The most significant of these for journalism is the feminist emphasis on reflexivity: the explicit and sustained attention to the researcher's (or journalist's) own position, perspectives, interests, and potential biases, and the incorporation of that reflexive awareness into the knowledge claims made. Feminist methodologists argue that reflexivity is not a sign of weakness or subjectivity but a form of intellectual honesty that makes the knowledge produced more reliable rather than less, because it makes the conditions of production transparent and thus open to critical evaluation.

For the science journalist, reflexivity means being explicit about what she does not know as well as what she knows, about the limits of her access to particular sources and perspectives, about the interests that her editorial context creates and how those interests have shaped her reporting choices, and about the ways in which her own social position, as a woman, as a member of a particular class and religious community, as a person with particular educational and professional training, has shaped what she noticed and what she overlooked. This is demanding work, and it runs against the conventions of much mainstream journalism, which present the journalist's perspective as invisible, as a neutral window onto reality rather than a particular lens shaped by particular circumstances. But it is increasingly recognized, even within mainstream journalism, as essential to the kind of transparency and accountability that journalism in the post-truth era must provide.

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The feminist methodological emphasis on participatory research, on the inclusion of research subjects as active participants in the production of knowledge rather than as passive objects of study, is also relevant to science journalism practice and connects with the dialogue model of science journalism discussed in Part One of this textbook. The science journalist who treats community members not just as sources for quotes that illustrate pre-determined story frameworks but as knowers whose own understanding of their situation provides essential information that professional science cannot fully substitute for, is practicing a form of participatory journalism that draws on feminist methodological principles.

The specific challenge of applying feminist research methods in the context of science journalism is that the time and resource constraints of journalism do not permit the kind of extended, iterative, relationship-based research that feminist methodological standards ideally require. The journalist who is working on a daily deadline cannot conduct the kind of sustained community engagement that feminist community-based research prescribes. But this is not a reason to abandon the principles; it is a reason to think carefully about how they can be adapted to the specific constraints of journalism practice, and to be honest about the ways in which those constraints limit what can be known and what can be claimed.

45.4 The Representation Problem: Women in Science, Science About Women

The representation problem in science journalism has two distinct but connected dimensions: the underrepresentation of women as science journalists, which is the focus of most of this part of the textbook, and the underrepresentation of women's perspectives, experiences, and concerns in the content of science journalism, which is a separate problem that can in principle persist even when women are fully represented in science journalism workforces.

The content dimension of the representation problem has been documented in several research traditions. Studies of news content in health journalism have found that women's health topics receive systematically different treatment than men's health topics, with women's health coverage more likely to focus on reproduction and family planning and less likely to cover the full range of chronic and acute conditions that affect women throughout the lifespan. Studies of environmental journalism have found that coverage of the gendered dimensions of environmental harm, which is now extensively documented in the environmental justice literature, is substantially underrepresented relative to its importance, with coverage of environmental issues more likely to focus on aggregate impacts rather than on the specific ways in which women and girls, particularly in low-income communities, experience the consequences of environmental degradation. Studies of technology journalism have found that coverage of artificial intelligence and digital technology systematically underrepresents the gendered dimensions of both the development of these technologies and their social impacts.

In the Bangladeshi context, the content dimensions of the representation problem have specific and urgent manifestations. The coverage of the garment industry in Bangladeshi science journalism, which is one of the most important domains of science journalism in the country given the industry's central role in the national economy and its direct health and environmental impacts, has been extensively studied and found to be substantially inadequate in addressing the

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gendered dimensions of the industry's health impacts. The primarily female workforce of the garment industry is the population most directly affected by occupational disease, chemical exposure, and the physiological consequences of the specific working conditions of the industry, but coverage of these impacts in terms of their gendered dimensions, including the specific vulnerabilities of women workers in relation to reproductive health, and the specific social consequences of occupational disease for women workers and their families, has been sparse relative to coverage of the aggregate economic importance of the industry.

45.5 Beyond "Add Women and Stir": Structural Transformation as the Goal

The phrase "add women and stir," coined by feminist critics of liberal feminism in the 1990s, describes a specific and limited approach to gender equity in science: the approach that treats the problem of women's underrepresentation in science as simply a problem of pipeline, to be solved by recruiting more women into scientific careers without changing the culture, the practices, or the epistemological assumptions of science itself. The feminist critique of this approach is that it is both insufficient and misleading: insufficient because the barriers to women's full participation in science are not primarily located at the pipeline entry point but are distributed throughout the career trajectory, and misleading because it frames gender equity as a matter of individual opportunity rather than of structural transformation.

The same critique applies to gender equity in science journalism. The approach of simply recruiting and retaining more women science journalists, while necessary, is insufficient if it is not accompanied by the transformation of the institutional cultures, the professional norms, the epistemological frameworks, and the political economies that currently make science journalism what it is. A science journalism newsroom that employs equal numbers of women and men but that continues to organize its science coverage around the transmission model, to prioritize institutional scientific authority over community knowledge, to treat emotional detachment as the supreme professional virtue, and to select stories based on the interests of elite male readers rather than the concerns of the full population of citizens, has achieved diversity without achieving equity and has not produced the transformation that genuinely gender-just science journalism requires.

The transformation that this textbook advocates is more demanding than adding women: it requires rethinking what science journalism is for, who it serves, what kinds of knowledge it values, and how it understands its relationship with both the scientific community and the broader public. It requires taking seriously the epistemological contributions of feminist science studies, the methodological innovations of feminist research, and the political commitments of feminist journalism practice. It requires the courage to challenge not just the explicit forms of gender discrimination in journalism institutions but the deeper cultural and epistemological assumptions that make those institutions what they are.

Chapter Forty-Six: Intersectionality, Religion, Class, and the Compound Architecture of Exclusion

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46.1 Applying Intersectionality to Bangladeshi Science Journalism: A Theoretical Framework

The application of Crenshaw's intersectionality framework to the specific situation of women science journalists in Bangladesh requires attention to the specific forms of social difference that are most consequential in the Bangladeshi context, which include but are not limited to gender, class, religious identity (and particularly the distinction between secular and conservative Muslim identity), regional origin, linguistic background, and educational formation. Each of these dimensions of social identity interacts with the others and with the specific institutional structures of Bangladeshi journalism to produce experiences that cannot be adequately understood by analyzing any single dimension in isolation.

The theoretical literature on intersectionality has expanded substantially since Crenshaw's original formulations, engaging with critiques from postcolonial theorists, queer theorists, and scholars working outside the North American context in which the concept was originally developed. The postcolonial intersectionality tradition, associated with scholars like Avtar Brah, Kalpana Kannabiran, and Floya Anthias, is particularly relevant to the Bangladeshi context because it attends to the ways in which colonialism and the post-colonial condition shape the specific configurations of social difference that intersectionality must analyze. In Bangladesh, the history of colonial rule, of partition and its consequences, of the Liberation War and its specific forms of gendered violence, and of the post-colonial development model that has been shaped by the specific political economy of a poor nation-state navigating between international capital and domestic political forces, all constitute important background conditions for understanding the specific forms that gender inequality takes in the journalism profession.

The queer theory critique of intersectionality is also relevant, particularly Judith Butler's argument that the categories through which intersectionality operates, including gender, class, and religious identity, are not pre-given social facts but are themselves constituted through ongoing social and discursive processes that can be challenged and transformed. This argument has important implications for how we think about gender equity in journalism: if gender identity is not a fixed biological given but a social and cultural construction, then the project of gender equity cannot be simply a matter of ensuring that the same categories of women have the same opportunities as the same categories of men. It must also involve the transformation of the gender categories themselves, including the ways in which journalism culture enforces particular performances of gender and penalizes departures from those performances.

46.2 Class, Education, and the Differentiated Experience of Women Science Journalists

The class dimension of women science journalists' experience in Bangladesh is both the most practically significant and the least theoretically developed in the existing literature on gender and journalism in the country. The vast majority of published accounts of women's experience in Bangladeshi journalism focus on women who have achieved a level of professional recognition that has brought them to the attention of researchers, international organizations, and advocacy groups: women who work for the major national newspapers, the main television channels, and the leading online news organizations, who are based in Dhaka, and who have the educational

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background, the English language skills, and the professional networks that make them visible to international networks of journalism support and advocacy.

The women who constitute the majority of women in Bangladeshi journalism, including women who work for smaller regional newspapers, community radio stations, NGO communications departments, and the emerging digital media sector outside the capital, have very different experiences that are shaped not just by gender but by the specific class position from which they enter the profession. A woman journalist from a lower-middle-class family in Comilla who has studied at a regional university and who works for a local newspaper, earning a salary well below the minimum wage, with no access to professional development resources, no institutional legal support, and no connection to the international networks that provide resources and advocacy for women journalists in the capital, is not simply experiencing the same gendered obstacles as a senior woman journalist at The Daily Star but experiencing them from a position of much greater structural vulnerability and with much fewer resources for resistance.

The class dimension of gendered exclusion in science journalism is particularly acute because science journalism, as this textbook has argued throughout, requires the kind of scientific literacy that is itself unequally distributed by class and educational background. The resources required to develop genuine competence in science journalism, including access to scientific literature, training in statistical methods and data analysis, language skills sufficient to navigate English-language science, and the professional networks that connect journalists to scientific experts, are resources that are much more accessible to women from educated middle-class and upper-middle-class backgrounds than to women from lower-class backgrounds. The result is that the class stratification of journalism generally, which already makes the profession less accessible to people from lower-class backgrounds than to those from more privileged ones, is amplified in the specific case of science journalism by the additional class-linked resources that science journalism requires.

The policy implication of this class analysis is that gender equity programs in science journalism that focus primarily on the most visible and already most advantaged women journalists are missing the majority of the women who are excluded from science journalism by the compound effects of gender and class. A genuinely intersectional approach to gender equity in science journalism would invest substantially in programs that specifically reach women journalists from lower-class backgrounds, in secondary cities and rural areas as well as in Dhaka, and that provide the resources necessary to develop the scientific literacy and professional skills that science journalism requires regardless of educational background.

46.3 Religion, Patriarchy, and the Specific Constraints on Muslim Women Science Journalists

The relationship between Islamic practice, Islamic politics, and the professional opportunities and constraints of Muslim women journalists in Bangladesh is one of the most sensitive and most important dimensions of the gender analysis of Bangladeshi science journalism. It is sensitive because it touches on questions of religious identity and practice that are deeply personal and deeply politicized, and because the historical tendency of both liberal and feminist

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discourse to treat Islam as simply a constraint on women's freedom, without attention to the ways in which many Muslim women understand their religious practice as a resource for rather than a barrier to professional and intellectual life, has produced analyses that are both inaccurate and politically counterproductive.

The correct starting point for the analysis is not the question of whether Islam is compatible with women's journalism, because the lived experience of Muslim women journalists in Bangladesh demonstrates that it is, but rather the question of how the specific forms of Islamic politics and Islamic social norms that operate in the contemporary Bangladeshi context shape the professional opportunities and constraints of women who practice journalism. These forms are plural and contested: the Islam practiced by a woman journalist in Dhaka who wears a hijab by personal choice while reporting on pharmaceutical regulation is not the same as the Islam invoked by Hefazat-e-Islam activists who argue that women should not be in public professional life at all, and neither is the same as the Islam of the more than a thousand-year tradition of Islamic scholarship that includes numerous important women scholars, scientists, and intellectuals.

The specific impact of the rise of political Islamism in Bangladesh, including both the Jamaat-e-Islami tradition and the more recent Hefazat-e-Islam movement, on women journalists has been documented in several research contexts and is directly relevant to science journalism. The demand by Hefazat and similar organizations that women be excluded from public professional life, or that their public activities be strictly regulated according to their interpretation of Islamic gender norms, has created a climate of threat for women journalists in certain contexts, particularly in rural and semi-urban areas where these movements have significant social influence. Women journalists who cover stories related to environmental damage, agricultural change, public health, and other science-adjacent topics in areas where Islamist movements have strong influence have reported specific forms of pressure, including threats and community-level ostracism, that their male colleagues do not face.

At the same time, it would be a serious analytical error to treat political Islamism as the primary or only source of constraint on Muslim women science journalists in Bangladesh. The secular and liberal establishments of Bangladeshi journalism are themselves not exempt from gender discrimination, as the testimonies of women journalists in secular publications abundantly demonstrate. The woman journalist who is respected by her colleagues at a liberal newspaper as long as she stays within the confines of the health and family beat, but who faces informal resistance and condescension when she attempts to cover the technical dimensions of climate change or pharmaceutical regulation, is experiencing a form of gender discrimination that has nothing to do with Islamic political ideology and everything to do with the secular patriarchal culture of mainstream Bangladeshi journalism.

46.4 Regional Dimensions: Women Science Journalism Outside Dhaka

The geographic concentration of Bangladeshi journalism in Dhaka is one of the most significant structural features of the media landscape, and it has specific gendered consequences that the analysis of gender and science journalism must address. The centralization of editorial decision-

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making, the concentration of the most prestigious and best-resourced news organizations, and the location of the major scientific institutions all in the capital means that the development of science journalism as a professional practice has been primarily a Dhaka phenomenon. Women science journalists who work outside Dhaka are working in an environment that is doubly marginal, marginalized by gender within journalism and marginalized by geography within science journalism.

The specific situation of women science journalists in the Chittagong division, the Sylhet division, the Rajshahi and Rangpur divisions, and the coastal divisions of Barishal and Khulna illustrates the compound nature of geographic and gendered exclusion. These regions contain some of the most scientifically significant stories in Bangladesh: the environmental and health consequences of garment industry activities in the Chittagong Export Processing Zone, the tea industry and its labor and environmental implications in Sylhet, the arsenic crisis in the northwest, the climate change impacts in the coastal south, and the river erosion and flood dynamics of the Brahmaputra-Jamuna system in the north. These stories require the kind of sustained presence and community engagement that only journalists based in those regions can provide, but the journalism infrastructure that would support quality science journalism in those regions is significantly underdeveloped.

Women science journalists in these regions face all of the gendered challenges documented in other chapters of Part Five, plus the additional challenges of geographic distance from the professional support networks, the editorial decision-making centers, and the international advocacy and support organizations that are all based in Dhaka or accessible primarily through Dhaka connections. They are less likely to receive institutional support for safety when their reporting creates risks; they are more likely to be working for organizations with limited resources and thus more dependent on institutional pressures and more vulnerable to local political and economic interests; and they are more likely to be operating in social environments where gender norms are more constraining and where the professional legitimacy of women journalists is less firmly established.

46.5 The Politics of Solidarity: Women's Journalism Organizations and Their Challenges

The development of women's journalism organizations in Bangladesh, including the Bangladesh NariSangbadhik Kendra (BNSK), founded in 2001 as the oldest women journalists' organization in the country, and various more recently established groups and networks, represents an important institutional response to the gendered challenges of the profession. These organizations perform multiple functions: they provide professional support and peer networks for women journalists; they conduct research and advocacy on the situation of women in journalism; they engage with international networks of women in journalism; and they serve as institutional bases for collective action on issues affecting women journalists.

The BNSK's history illustrates both the possibilities and the limitations of organized collective action by women journalists in Bangladesh. The organization's documentation of the numbers, distribution, and conditions of women journalists has been an important resource for advocacy, and its existence as a recognized professional body has given women journalists an institutional

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voice in policy discussions about the media that individual journalists speaking alone could not have achieved. Its engagement with international organizations including UN Women and the International Federation of Journalists has brought resources and frameworks that have strengthened its domestic advocacy capacity.

The limitations of women's journalism organizations in Bangladesh are equally significant. The organizations have historically been able to mobilize primarily the most advantaged women journalists, those in Dhaka, in established news organizations, and with the educational and professional background to participate in the organizational culture of professional associations. Women journalists in secondary cities, in smaller organizations, and from lower-class backgrounds have been much less consistently represented. The organizations have also been constrained by the political environment, particularly during the Sheikh Hasina period, in which criticism of the government was dangerous and independent civil society organizations faced significant pressure. And they have been constrained by the same internal tensions that affect women's organizations generally, including tensions between different feminist political frameworks, between different generational perspectives on what women's empowerment requires, and between the interests of women in different professional and social positions.

The post-August 2024 political transition created new possibilities for women's journalism organizations to operate with greater freedom and to engage more openly with the media reform process. The Gender Charter of Commitments, which engaged over twenty newsrooms by late 2025, represents one concrete outcome of this more open environment. But the same political transition also created new risks, as documented above, and the organizations' capacity to protect their members from the new forms of threat that emerged in the transition period has been tested and found to be limited.

Chapter Forty-Seven: Paths Forward: Toward Gender-Just Science Journalism in Bangladesh

47.1 The Institutional Reform Agenda: Necessary but Insufficient

The most immediately practicable dimension of the reform of gender relations in Bangladeshi science journalism is institutional: the reform of the rules, structures, and practices of news organizations, journalism schools, regulatory bodies, and professional associations in ways that reduce formal barriers to women's participation and create more equitable conditions for women science journalists. This reform agenda is both necessary and, by itself, insufficient, and it is important to understand both its importance and its limits clearly.

The specific institutional reforms most urgently needed in Bangladeshi science journalism include the following areas. First, transparent data collection and reporting on the gender composition of newsrooms at all levels, from junior reporters to editorial leadership, is a prerequisite for evidence-based assessment of progress and for holding organizations accountable for the commitments they make. Currently, the data on women's representation in

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Bangladeshi journalism is patchy, inconsistently collected, and often self-reported by organizations with little incentive for accuracy. The establishment of an independent monitoring mechanism, ideally as part of the media regulatory reform that the Media Reform Commission has proposed, would provide the foundation for all other reform efforts.

Second, the development of genuine institutional accountability mechanisms for gender discrimination and sexual harassment in newsrooms is essential. The existing complaint mechanisms in most Bangladeshi news organizations are either nonexistent or inadequate, and women who face discrimination or harassment within their organizations have little recourse that does not put their careers at severe risk. The establishment of independent grievance mechanisms, with genuine confidentiality protections and genuine authority to investigate and sanction, would not eliminate discrimination and harassment but would significantly change the incentive structure within which they occur.

Third, the reform of the journalism education curriculum, discussed in Part Four of this textbook, to incorporate feminist epistemology, gender-aware scientific literacy, intersectional analysis of media institutions, and the gendered dimensions of science-society relations is essential for producing the next generation of journalists with the intellectual tools to practice genuinely gender-just science journalism. This reform cannot be effective in isolation from the reform of journalism school culture, which must itself become less hierarchical, less masculinized, and more genuinely attentive to the different experiences and perspectives that students of different genders, classes, and regional backgrounds bring to the classroom.

Fourth, the creation of dedicated support structures for women science journalists facing harassment, including legal assistance programs, security training, digital safety resources, and psychological support, is urgently needed given the documented severity of gendered harassment in the digital environment. These structures cannot fully protect women journalists from the threats they face, because the threats are structurally produced by conditions that individual support mechanisms cannot eliminate; but they can significantly reduce the isolation and vulnerability of women journalists facing harassment and make the profession more survivable for the women who are most committed to practicing it.

47.2 Epistemological Transformation: Rethinking What Science Journalism Is

The deeper level of reform that this textbook argues is necessary for genuinely gender-just science journalism is epistemological: the transformation of the fundamental assumptions about knowledge, objectivity, authority, and public reason that have made science journalism what it is. This transformation cannot be mandated by regulation or achieved through institutional design alone; it must be cultivated through intellectual engagement, professional practice, and the development of a journalism culture that genuinely values the epistemological contributions of feminist science studies and feminist journalism practice.

The central epistemological transformation that gender-just science journalism requires is the shift from the pretense of the view from nowhere to the practice of situated, reflexive, and accountable knowledge production. This means that science journalism must become more

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honest about its own position: about the interests that shape its selection of topics and sources, about the epistemological frameworks that determine what counts as credible evidence, about the limits of its knowledge and the conditions under which those limits could be extended. It means that the journalism organization that claims to provide "objective" science coverage while sourcing exclusively from male institutional scientists, while assigning the most prestigious beats to male journalists, and while evaluating news value according to criteria that reflect the interests of elite male readers, must recognize and acknowledge that these practices produce a specific and limited perspective, not an objective view of reality.

The positive content of the epistemological transformation, not just what it requires rejecting but what it requires developing, includes the integration of standpoint theory's insight that marginalized knowers have specific forms of epistemic access that dominant knowers lack; the affective epistemology insight that embodied engagement with the subjects of reporting is an epistemic resource rather than a bias; the feminist methodological emphasis on reflexivity and on the participatory inclusion of research subjects in knowledge production; and the intersectional analysis of the multiple dimensions of social difference that shape what can be known, by whom, and in what terms.

This epistemological transformation is not a rejection of the commitment to accuracy, evidence, and factual accountability that defines journalism as a democratic institution. It is, rather, a more sophisticated and more demanding conception of what that commitment requires: one that recognizes the complexity of the relationship between the journalist, the evidence, and the social conditions in which both are situated, and that holds journalism to a higher standard of honesty about that complexity than the simple assertion of objectivity can provide.

47.3 Pedagogical Transformations: Teaching Feminist Science Journalism

The translation of the epistemological and institutional reforms advocated in this chapter into journalism education practice requires specific pedagogical innovations that go beyond adding a course on gender and journalism to an existing curriculum. The feminist pedagogy tradition, drawing on the work of Paulo Freire, bell hooks, and other critical educators, provides relevant principles for thinking about how journalism education must be transformed rather than merely supplemented.

The Freirean principle of conscientization, the development of critical consciousness about the structural conditions of one's situation, is particularly relevant for journalism education in the gender context. The journalism student who learns to understand the gendered architecture of the media institutions she is entering, who recognizes the epistemological assumptions that organize her professional training, and who develops the critical vocabulary to name and challenge the patriarchal norms of her future newsroom, is better equipped for genuine professional transformation than the student who receives only technical training in a cultural vacuum.

bell hooks' concept of engaged pedagogy, which emphasizes the importance of the teacher's own commitment to learning and self-transformation as a model for students, is also relevant. The journalism educator who practices feminist reflexivity in her own work, who is explicit about the

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assumptions she brings to her teaching and the limits of her own expertise, and who models the kind of intellectual courage that feminist science journalism requires, is teaching more through her practice than through her content alone.

Specific pedagogical innovations that journalism schools in Bangladesh should consider include the integration of feminist science studies readings into the core curriculum rather than as optional supplements; the development of case study materials from the Bangladeshi context that illustrate both the gendered obstacles facing women science journalists and the innovative practices that the best women science journalists have developed to address those obstacles; the inclusion of women scientists, women science journalists, and feminist scholars as regular classroom guests and as role models for students of all genders; the development of fieldwork assignments that specifically require students to attend to the gendered dimensions of the scientific stories they cover; and the creation of supportive pedagogical relationships that allow women students to name and discuss the gendered barriers they encounter in their professional development without those barriers being minimized or pathologized.

47.4 Professional Organization and Collective Action

The reform of gender relations in Bangladeshi science journalism ultimately requires collective action as well as individual excellence and institutional reform. Individual women science journalists, however skilled and committed, cannot transform the structural conditions of their profession without collective organization and the kind of sustained advocacy that only organized professional communities can sustain over time.

The existing professional organizations for women journalists in Bangladesh, including the BNSK and various newer formations, provide important foundations for this collective action, but they need to be strengthened, broadened, and connected more effectively with the broader landscape of labor organization and civil society advocacy in Bangladesh. The strengthening of these organizations requires both material resources and the development of internal democratic structures that are genuinely inclusive of women journalists from different class backgrounds, different regions, and different organizational contexts.

The connection between gender equity advocacy in journalism and the broader labor rights context in Bangladesh is an important and underexplored dimension of collective action. Women journalists in Bangladesh are workers as well as professionals, and the labor rights issues they face, including low wages, irregular employment, lack of social protection, and absence of collective bargaining rights, intersect with their gender-specific professional challenges in ways that cannot be addressed by gender-specific professional advocacy alone. The development of connections between women's journalism organizations and the broader Bangladeshi labor movement, including the garment sector unions that represent the most politically organized section of Bangladeshi women workers, represents a potential strategic alliance that could significantly strengthen the advocacy capacity of women journalists.

International solidarity, mediated through organizations including the International Federation of Journalists, the Coalition for Women in Journalism, and the Global Forum for Media

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Development, has provided important resources and frameworks for advocacy by women journalists in Bangladesh. This international solidarity is genuinely valuable, but its most transformative contribution is when it strengthens the capacity of domestic actors for self-determined advocacy rather than when it imposes international frameworks that are not well adapted to the specific Bangladeshi context.

47.5 The Long-Term Vision: What Gender-Just Science Journalism Would Look Like

The vision of genuinely gender-just science journalism in Bangladesh is not a modest one, and its articulation is important precisely because ambitious visions of what could be are necessary preconditions for the kind of sustained collective effort that substantive transformation requires. The vision that this textbook proposes is one in which science journalism in Bangladesh is organized around principles of epistemic justice, which is the equal recognition of the value of different forms of knowledge and different types of knowers; of institutional equity, which is the equal distribution of the resources, recognition, and power that enable quality science journalism across lines of gender, class, religion, and region; and of democratic accountability, which is the orientation of science journalism toward the genuine information needs of the full Bangladeshi citizenry rather than toward the interests of elite audiences and institutional patrons.

In practical terms, this vision would be realized in a media landscape in which the science coverage in a major Bangladeshi newspaper or television channel is produced by a journalism team that genuinely reflects the diversity of Bangladeshi society in terms of gender, class, regional background, and linguistic experience; in which the sourcing patterns of that coverage reflect the full range of scientific expertise available in Bangladesh, including women scientists, scientists from secondary institutions, and scientists whose research focuses on the scientific questions most directly relevant to marginalized communities; in which the epistemological framework of the coverage is explicitly reflexive, honest about the limits of its knowledge, and attentive to the multiple forms of knowledge, including community knowledge and traditional ecological knowledge, that formal scientific research does not capture; and in which the professional culture of the journalism organization supports rather than undermines the contributions of women journalists through equitable assignment of beats, equitable recognition of achievement, and robust institutional protection from harassment and discrimination.

This vision is demanding, and the distance between it and the current reality of Bangladeshi science journalism is very substantial. But the distance is not a reason to abandon the vision; it is a reason to be clear about what the vision requires, honest about the obstacles standing in the way of its realization, and realistic about the pace and conditions under which progress is achievable. The chapters of Part Five that precede this one have tried to provide the analytical framework, the historical context, the theoretical resources, and the empirical grounding that make progress toward this vision possible. The remainder of this textbook, including the parts on digital transformation, international scientific collaboration, science communication in Bangla, and the long-term future of the profession, will continue to develop and complicate this vision as it encounters the specific challenges and possibilities of each additional dimension of Bangladeshi science journalism.

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Coda to Part Five: The Personal is Epistemological

The feminist insight that the personal is political has been one of the most productive and most contested concepts in twentieth-century feminist thought. Its application to the domain of knowledge production, which might be formulated as "the personal is epistemological," is the animating claim of this part of the textbook. The argument of Part Five, developed across eight chapters, is that the personal experiences of women science journalists in Bangladesh, including their experiences of exclusion, harassment, condescension, double standards, and insufficient support, are not merely personal complaints or professional frustrations; they are symptoms of structural conditions that have epistemological as well as political and professional consequences.

When a woman science journalist is excluded from the science beat and assigned to cover community health instead, the profession loses access to the specific perspective, the specific source networks, and the specific questions that she would have brought to the more technical beat. When a woman science journalist faces harassment that silences her reporting, the public loses access to the stories she would have told. When a woman science journalist is dismissed as less rigorous than her male colleagues because her reporting acknowledges emotional dimensions of scientific issues that the transmission model treats as irrelevant, the public loses access to the forms of knowledge that emotional engagement and empathetic connection make possible.

These losses are not merely personal losses for the women involved. They are public losses, losses to the quality and completeness of the information available to Bangladeshi citizens for making decisions about their own lives, their communities, and their collective governance. This is why gender equity in science journalism is not merely a matter of professional fairness or institutional diversity, important as those are; it is a matter of epistemological justice, of the right of every Bangladeshi citizen to access the most complete and most reliable information about the scientific dimensions of the questions that affect their lives.

The student who has worked through Part Five of this textbook should emerge from it with a richer and more demanding understanding of what science journalism is, what it should do, and what transformation it requires. She should understand that the feminist critique of science journalism is not an external challenge to a practice that would otherwise be doing fine, but an internal challenge that arises from within the deepest commitments of journalism itself: the commitment to truth, the commitment to democratic accountability, and the commitment to the full and equal representation of all citizens in the public knowledge that journalism produces and circulates. She should understand that these commitments require, not merely permit but genuinely require, the transformation of the gendered architecture of science journalism, and that this transformation is part of the larger project of making Bangladeshi science journalism worthy of the democratic function that its own self-understanding assigns to it.

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Chapter Notes and Further Reading for Part Five

The following resources provide essential background for the themes developed in Part Five, organized by chapter area, and the student is strongly encouraged to engage with as many of them as possible, recognizing that primary texts are essential and that the reading of secondary summaries, however good, cannot substitute for direct engagement with the foundational arguments.

On feminist epistemology, the Stanford Encyclopedia of Philosophy's entry on "Feminist Epistemology and Philosophy of Science," revised in 2024, provides the most comprehensive and most current overview available. Sandra Harding's "Whose Science? Whose Knowledge?" (1991) remains the most important single statement of feminist standpoint epistemology in its most developed form, and her more recent "Sciences from Below: Feminisms, Postcolonialities, and Modernities" (2008) applies the framework to the postcolonial context in ways directly relevant to Bangladesh. Donna Haraway's "Simians, Cyborgs, and Women: The Reinvention of Nature" (1991), which includes the "Situated Knowledges" essay discussed in Chapter Forty, is essential primary reading.

The concept of affective epistemology in journalism studies is developed in work published in the Journalism journal in April 2025 by scholars developing the concept of "Journalism and Embodied Knowledge," which is available through major academic journal databases. The work of Sandra Banjac on intersectionality and standpoint epistemology in journalism studies, published in the collection "Critical Communication Research with Global Inclusivity" (2024, Routledge), provides an important bridge between the general feminist epistemology tradition and the specific context of journalism studies.

On feminist science studies, the most accessible and most useful introductory readings are Helen Longino's "Science as Social Knowledge" (1990), Evelyn Fox Keller's "Reflections on Gender and Science" (1985), and Anne Fausto-Sterling's "Myths of Gender" (1985) and "Sexing the Body" (2000). The more recent work of philosopher Elizabeth Anderson on feminist epistemology and democratic science provides a useful update on the tradition that is specifically attentive to its policy implications.

On the history of women in Bangladeshi journalism, the most directly useful resources include the publications of the Bangladesh NariSangbadhik Kendra, which has been documenting women's participation in Bangladeshi journalism since 2001; the "Women Journalists Journal: Stories of Gender Justice from Women Journalists across the Asia-Pacific" publication of UN Women and OHCHR, which includes testimonies from several Bangladeshi women journalists; and the research reports of the South Asian Media Freedom and Solidarity Network on the situation of women journalists in the region.

On gendered online harassment, the UNESCO global survey "Online Violence Against Women Journalists: A Worldwide Wake-Up Call" provides essential statistical context. Nishat Parvez's 2025 study in Media Asia, "Fighting gendered misinformation and harassment on social media for Bangladesh's female journalists," published in Volume 52, Number 4, provides the most

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specific and most current analysis of the Bangladeshi context. The Coalition for Women in Journalism's regular reports on press freedom for women journalists, including the July 2024 report that documented police violence against women journalists in Bangladesh, provide important ongoing documentation of specific incidents.

On gender and media law, Catharine MacKinnon's "Toward a Feminist Theory of the State" (1989) provides the foundational feminist legal framework. Martha Nussbaum's "Sex and Social Justice" (1999) provides a more liberal feminist alternative that has been influential in international human rights discourse. The CEDAW Committee's General Recommendations, particularly General Recommendation No. 33 on women's access to justice and General Recommendation No. 35 on gender-based violence against women, provide the most directly relevant international human rights framework.

On intersectionality, Kimberlé Crenshaw's two foundational articles, "Demarginalizing the Intersection of Race and Sex" (1989) and "Mapping the Margins" (1991), are essential primary texts that should be read in their original forms rather than through secondary summaries. Patricia Hill Collins's "Black Feminist Thought" (1990) develops the intersectional framework in a more comprehensive sociological and political direction. For the specific postcolonial and South Asian dimensions of intersectionality, Avtar Brah and Ann Phoenix's article "Ain't I A Woman? Revisiting Intersectionality" (2004) and Kalpana Kannabiran's edited collection "The Violence of Normal Times" (2005) provide important extensions and complications of the framework.

On the Gender Charter of Commitments for News Media in Bangladesh, the most current information available in late 2025 is through the UNESCO Dhaka office and the Swedish Embassy in Dhaka, which have been the primary institutional drivers of the initiative. The Daily Star's reporting on the Gender Charter, including the opinion piece by Sweden's human rights ambassador published in November 2025, provides accessible documentation of the initiative's scope and ambitions.

The World Press Freedom Day 2025 dialogue in Bangladesh, "Brave New Bangladesh: Reform Roadmap for Press Freedom," organized by UNESCO Dhaka in partnership with the Embassy of Sweden and Transparency International Bangladesh, addressed gender disparity in newsrooms as one of its central concerns. The proceedings and outcome documents from this dialogue are essential reading for understanding the current state of the gender and journalism reform debate in Bangladesh.

On the feminist pedagogy frameworks relevant to journalism education, Paulo Freire's "Pedagogy of the Oppressed" (1968) remains essential. bell hooks's "Teaching to Transgress: Education as the Practice of Freedom" (1994) is the most important practical development of the feminist engaged pedagogy tradition. Barbie Zelizer's work on journalism education, including her edited collection "The Changing Faces of Journalism" (2009), provides the journalism-specific context within which feminist pedagogy insights should be applied.

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On the international human rights framework for women's equality in professional life, the Beijing Platform for Action (1995) and its review documents, including the outcomes of the thirty-year review process that culminated in 2025, are primary documents that should be read directly. The United Nations Women's regular monitoring reports on progress toward gender equality in media and communication provide important quantitative benchmarking. The International Federation of Journalists' reports on the situation of women journalists globally, which include specific country assessments, provide the professional journalism context.

For the specifically Bangladeshi institutional and legal context, the Media Reform Commission's report, recommended by Chief Adviser Muhammad Yunus for required reading by journalism students and faculty, addresses the gender dimension of media reform explicitly. The reports of Transparency International Bangladesh on transparency and accountability in the media sector provide an important complementary framework that addresses the intersections of corruption, institutional accountability, and gender equity. The annual reports of the Bangladesh Human Rights Commission, where available, document the broader human rights environment within which women journalists' rights claims are situated.

On the postcolonial dimensions of feminist science studies, the most important readings are Donna Haraway's "Primate Visions: Gender, Race, and Nature in the World of Modern Science" (1989), which provides the foundational analysis of the intersection of colonialism and science; Sandra Harding's "Sciences from Below" (2008), which develops the postcolonial feminist standpoint framework; and Warwick Anderson and Vincanne Adams's edited collection "Remaking Race and Disease" (2008), which applies these frameworks to the specific domain of medicine and public health.

The student who has engaged seriously with this list of readings will not have exhausted what there is to know about gender and science journalism, but she will have the foundational knowledge and the analytical frameworks to continue learning from her own practice and from the ongoing development of the research literature. The formation of the gender-conscious science journalist is, like the formation of the science journalist generally, a lifelong project that extends well beyond the formal boundaries of any educational program.

This concludes Part Five of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge." Part Six will examine the digital transformation of science journalism in Bangladesh in depth, exploring the specific opportunities and challenges that the digital media environment creates for science journalism, including the role of social media in science communication, the crisis of misinformation and disinformation in the digital environment, the algorithmic mediation of scientific information, the emerging role of artificial intelligence in both journalism practice and science reporting, and the specific conditions under which digital journalism in Bangladesh can be made to serve the democratic function of science journalism at its best.

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PART SIX: THE DIGITAL TURN: ALGORITHMS, ARTIFICIAL INTELLIGENCE, MISINFORMATION, AND THE CRISIS OF EPISTEMIC AUTHORITY IN BANGLADESHI SCIENCE JOURNALISM

The Collapse of the Gatekeeping Order, the Rise of Synthetic Reality, and the Impossible Demands of Truth-Telling in a Networked World

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Prolegomena to Part Six: On the Specific Violence of the Digital Age

Every major transformation in the technology of communication has been accompanied by crisis, by predictions of catastrophe, by the displacement of trusted epistemic authorities, and by the emergence of new forms of power over what people believe and why. The printing press provoked religious wars and two centuries of epistemological instability before the Enlightenment order of secular reason established a new, if always contested, framework for public knowledge. The telegraph, the newspaper, and the radio each produced their own crises of credibility, their own panics about the fragmentation of shared reality, their own debates about the proper relationship between communication technology and democratic governance. The student who approaches the digital transformation of journalism with the historical awareness that these previous transitions produced should not be surprised to find herself in the middle of a profound and disorienting crisis, because that is precisely what major communication revolutions do.

What is distinctive about the digital transformation, and what makes it specifically difficult for science journalism, is the combination of three features that have not previously appeared together in the same communicative environment. The first is the collapse of the gatekeeping order: the systematic dismantling of the institutional mechanisms, including editors, publishers, broadcasters, and the professional norms they enforced, that previously regulated what entered public discourse as legitimate information. The second is the rise of algorithmic mediation: the replacement of human editorial judgment, with all its flaws, by automated systems whose logics of selection and amplification are opaque to most users, structured by commercial incentives that have no relationship to epistemic values, and capable of operating at speeds and scales that no human editorial system can match. The third is the emergence of synthetic reality: the development of artificial intelligence tools capable of generating text, images, audio, and video that are indistinguishable from authentic human production, at a quality and cost that makes large-scale deployment of synthetic misinformation not merely possible but, as Bangladesh discovered in the lead-up to its February 2026 elections, already routine.

These three features interact in ways that are specifically destructive to the epistemic project of science journalism. Science journalism, as this textbook has argued throughout, is fundamentally about the reliable mediation between the specialized knowledge practices of scientific institutions and the democratic knowledge needs of citizens. It requires trust: trust by scientists in the accuracy and honesty of journalistic representation, trust by citizens in the reliability and independence of journalistic sources, and trust by the institutions of democratic governance in

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the capacity of an informed public to make sound collective decisions. All three forms of trust are being systematically eroded by the digital environment in Bangladesh, and the erosion is happening faster than the institutional capacity to respond to it.

Part Six examines this crisis in detail, across nine chapters that move from the theoretical architecture of digital journalism through the specific empirical realities of misinformation in Bangladesh, through the legal and regulatory landscape, through the crisis of artificial intelligence and deepfakes, and into the practical possibilities for rebuilding epistemic authority in the digital environment. The argument of Part Six is not that the digital transformation is simply catastrophic for science journalism; it is that the digital transformation is simultaneously catastrophic and generative, that it destroys the old structures of epistemic authority while creating new possibilities for democratic science communication that were not available before, and that the task of the science journalist in the digital age is to navigate this double reality with clear eyes, solid theoretical foundations, and the practical skills that honest, evidence-based journalism in a technically complex and politically dangerous environment requires.

Chapter Forty-Eight: The Theoretical Architecture of Digital Journalism: Networks, Platforms, and the Reconstitution of the Public Sphere

48.1 Habermas, the Public Sphere, and the Digital Challenge

Jurgen Habermas's concept of the public sphere, first elaborated in "The Structural Transformation of the Public Sphere" (1962, translated into English in 1989), remains the most influential theoretical framework for thinking about the relationship between journalism, communication technology, and democratic governance, and it is therefore the most important starting point for any theoretical analysis of the digital transformation of journalism, including science journalism. Habermas's concept describes a domain of social life in which private individuals come together as a public to discuss matters of common concern, forming public opinion through the exchange of rational-critical argument, and through which that public opinion is brought to bear on the exercise of political power. This public sphere, in Habermas's account, was constituted historically through the institutions of the bourgeois press and the culture of coffee-house debate in seventeenth and eighteenth century Europe, and it has always been both a normative ideal and a historically imperfect institutional reality.

The ideal of the public sphere has been subjected to extensive criticism from multiple directions since Habermas's original formulation, and these criticisms are directly relevant to any assessment of what the digital transformation means for journalism and democratic communication. The most important criticisms for the present purpose are those developed by feminist theorists, most notably Nancy Fraser in her influential 1990 essay "Rethinking the Public Sphere," and by postcolonial theorists working in the tradition of subaltern studies. Fraser's critique argues that Habermas's account of the bourgeois public sphere both idealizes its historical reality, which was in fact systematically exclusionary of women, working-class people, and minorities, and undertheorizes the role of "counter-publics" or subaltern counter-publics, the

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alternative public spheres organized by excluded groups to develop their own identities, interests, and claims that compete with and challenge the dominant public sphere. This critique is directly applicable to the Bangladeshi context, where the mainstream journalism public sphere has historically been organized by and for the urban educated elite, and where the communities most directly affected by the scientific issues this textbook discusses, including rural women, garment workers, and climate-displaced coastal communities, have functioned as counter-publics with limited access to the dominant channels of public communication.

The postcolonial critique of the public sphere, developed by scholars including Partha Chatterjee, Dipesh Chakrabarty, and Arjun Appadurai, argues that the concept of the public sphere, rooted in the specific historical experience of European bourgeois modernity, cannot be straightforwardly applied to the postcolonial context of societies like Bangladesh, where the colonial legacy, the religious and communal dimensions of public identity, and the structural conditions of poverty and institutional weakness create a fundamentally different relationship between the state, civil society, and public communication than the Habermasian model assumes. This critique is not a reason to abandon the normative ideals of democratic communication that the public sphere concept embodies; it is a reason to develop a more historically situated and culturally specific understanding of how those ideals can be pursued under conditions that are different from the conditions of their original articulation.

The digital transformation of the public sphere has generated an enormous scholarly literature over the past two decades, and the theoretical debate within that literature is relevant to the science journalist who wants to understand what the digital environment she is operating in actually is and what its consequences for democratic communication might be. The optimistic view of the digital public sphere, associated with scholars like Yochai Benkler in "The Wealth of Networks" (2006) and early theorists of the internet as a democratic medium, argued that the internet would radically democratize public communication by reducing the barriers to entry for public discourse, enabling the formation of new publics organized around shared interests rather than shared geography, and providing the infrastructure for distributed fact-checking and collective intelligence that would improve the overall quality of public knowledge. This view captured something real about the internet's potential, but it has been largely overtaken by a more pessimistic assessment grounded in the empirical realities of the past decade.

The pessimistic view, articulated with particular clarity by scholars including Cass Sunstein in "Republic.com" (2001) and its successors, Eli Pariser in "The Filter Bubble" (2011), and Shoshana Zuboff in "The Age of Surveillance Capitalism" (2019), argues that the digital public sphere is structurally organized to produce not rational-critical discourse but emotional amplification, tribal identification, and the fragmentation of shared reality into incompatible information environments. The specific mechanisms through which this fragmentation occurs, including the algorithmic filter bubble that shows users primarily content that confirms their existing beliefs, the engagement-maximizing incentives of advertising-based platforms that systematically amplify outrage and conflict, and the network effects that concentrate users on a small number of enormously powerful platforms, are not accidental features of the digital environment but structural consequences of the commercial architecture through which the internet has actually developed.

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The science journalist in Bangladesh operates within this fragmented and commercially structured digital public sphere, and she must understand its architecture not as a neutral technical environment but as a political and economic system with specific consequences for the kinds of knowledge that get circulated, amplified, and believed. The specific consequences for science journalism are severe: in an attention economy that systematically favors the emotionally arousing over the evidentially reliable, the simple over the complex, the outrageous over the accurate, and the confirming over the challenging, science journalism's core commitments to accuracy, complexity, uncertainty acknowledgment, and evidence-based argument are systematically disadvantaged.

48.2 Platform Theory: Understanding the Architecture of Epistemic Power

The theoretical framework most adequate to understanding the specific challenges that the digital environment creates for science journalism is not the public sphere theory of Habermas or even its critics, but the emerging field of "platform theory" or "platform studies," which analyzes the specific institutional form of the platform as the dominant organization of the contemporary internet and its consequences for the production, circulation, and authority of knowledge. The concept of the platform, as developed by scholars including Tarleton Gillespie in "Custodians of the Internet" (2018), Nick Srnicek in "Platform Capitalism" (2017), and José van Dijck, Thomas Poell, and Martijn de Waal in "The Platform Society" (2018), describes a specific type of intermediary institution that operates in a fundamentally different way from the journalism institutions it has partially displaced.

The platform's most important characteristics, for the purposes of understanding its consequences for science journalism, are the following. First, the platform is organized around data extraction and analysis rather than around the editorial function of selecting and curating content for quality and relevance: it processes enormous volumes of user-generated content and interaction data to identify patterns that can be exploited for advertising targeting, without taking editorial responsibility for the content itself. This enables platforms to claim both the commercial benefits of content curation, through algorithmic amplification of engaging content, and the legal immunities of neutral conduits, by denying editorial responsibility for the harmful content they amplify. Second, the platform's operational logic is engagement maximization: the algorithmic systems that determine what content users see are optimized to maximize the time users spend on the platform and the intensity of their interaction with content, because both of these metrics are what advertisers pay for. The consequences of this engagement-maximization logic for the quality of information circulated on platforms are profound and well-documented: emotionally arousing content, including outrage, fear, and disgust, consistently generates more engagement than accurate, nuanced content, and the algorithm amplifies accordingly. Third, the platform's scale and network effects create an extraordinary concentration of communicative power: a small number of platforms, primarily Facebook (which remains by far the dominant social media platform in Bangladesh), YouTube, TikTok, and WhatsApp, now mediate a substantial proportion of all public communication in Bangladesh, giving these private corporations enormous and largely unaccountable power over the information environment.

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The implications of platform architecture for science journalism in Bangladesh are multiple and serious. The science journalist who distributes her work through social media platforms is operating within a system that is structurally biased against the kinds of content she produces. A carefully researched, nuanced article about the peer-reviewed evidence on the health consequences of arsenic in drinking water competes for attention on the same platform feed as a rumor about alien visitation, a celebrity gossip story, a politically charged video, and a religious exhortation. The algorithm that determines which of these items more users will see is not evaluating them for accuracy, significance, or social value; it is evaluating them for the likelihood that they will generate engagement, and by most available evidence, the misinformation and the outrage generate more engagement than the careful analysis.

The political economy of platform capitalism has specific consequences for the economic sustainability of journalism in Bangladesh that compound these epistemological problems. The platform-driven shift of digital advertising revenue away from journalism organizations and into the coffers of Facebook and Google has been a global phenomenon, but it has particular severity in countries like Bangladesh where journalism has historically operated on thin margins and where the collapse of advertising revenue threatens the economic viability of news organizations that have not found alternative funding models. The consequences for science journalism are especially severe because science journalism, as Part Four of this textbook has documented, requires investments in training, expertise, and time that are incompatible with the clickbait-driven, high-volume content production model that has emerged as the dominant response to the platform economy in much of the Bangladeshi media sector.

48.3 Networked Publics and the Theory of Affective Publics

The concept of "networked publics," developed by danah boyd and colleagues working in the intersection of science and technology studies and media studies, describes the specific characteristics of the digital publics that form around networked communication technologies. Boyd's analysis identifies four features of networked publics that distinguish them from face-to-face or broadcast publics and that have important consequences for science communication: persistence, the fact that digital content remains available and searchable long after it is initially posted; searchability, the fact that digital content can be retrieved through keyword search in ways that bring it to new audiences in new contexts; replicability, the fact that digital content can be copied and redistributed without any degradation of quality; and scalability, the fact that digital content can reach potentially unlimited audiences through viral distribution without requiring any additional effort or expense by the original author.

These features of networked publics create specific opportunities and specific risks for science journalism. The persistence and searchability of digital science journalism mean that a well-researched article about, say, the epidemiology of dengue fever in Dhaka can continue to reach new readers for years after its initial publication, potentially becoming a durable resource for public understanding of the topic rather than a brief news item that disappears from public attention after a few days. But the same features mean that false information, once circulated in the digital environment, is similarly persistent and searchable, and the lack of any systematic

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mechanism for updating or correcting the digital record means that debunked misinformation often remains findable and shareable long after corrections have been published.

The concept of "affective publics," developed by Zizi Papacharissi in "Affective Publics" (2015), is particularly relevant for understanding the specific dynamics of science communication in the digital environment. Papacharissi argues that the digital publics that form around networked communication are not primarily organized by rational-critical discourse, as the Habermasian model would require, but by shared affective orientations: feelings of belonging, outrage, excitement, or solidarity that mobilize people around shared concerns without necessarily involving the kind of evidence-based deliberation that the normative ideal of the public sphere demands. This is not necessarily a negative development: affective solidarity can mobilize political action around genuine injustices and can create forms of public engagement with scientific issues that purely informational science communication cannot achieve. But it is a development that the science journalist must understand and respond to intelligently, because the affective dynamics of digital platforms can both support and undermine the epistemic project of science journalism, depending on how skillfully that dynamic is navigated.

48.4 The Concept of Infodemic: WHO, COVID-19, and the Pathology of Information Overload

The concept of the "infodemic," introduced by the World Health Organization during the COVID-19 pandemic, has become an important addition to the theoretical vocabulary of science communication in the digital age. The WHO defined an infodemic as an overabundance of information, some accurate and some not, that makes it hard for people to find trustworthy sources and reliable guidance when they need it. The concept captures something important about the specific character of the digital information crisis that goes beyond the simple dichotomy of true versus false information: the problem is not just that false information circulates but that the sheer volume and variety of information, including large amounts of accurate but contradictory or confusing information, overwhelms the cognitive capacity of ordinary citizens to evaluate and synthesize it into reliable knowledge.

The infodemic concept has been criticized by some scholars as inadequate, partly because it risks pathologizing information diversity in ways that could license censorship, and partly because it frames the information problem as primarily a supply-side problem of too much information rather than a structural problem of the communicative systems through which information is produced, distributed, and evaluated. Both criticisms have merit, but the concept nonetheless captures something real and important about the specific challenge facing science journalism in the digital age: the challenge of not just producing accurate information but of making that accurate information findable, comprehensible, and usable by citizens who are simultaneously bombarded with competing and contradictory claims.

In the Bangladeshi context, the infodemic concept is particularly relevant for understanding the specific challenges of science communication during public health crises, including the COVID-19 pandemic, dengue fever outbreaks, and the recurring episodes of cholera and other communicable diseases that affect the country. Research on information behavior during the

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COVID-19 pandemic in Bangladesh found that social media, particularly Facebook and WhatsApp, were the primary sources of information about the pandemic for a significant proportion of the population, and that misinformation about COVID-19 spread rapidly through these channels, including false claims about treatments, prevention measures, and the origin and nature of the disease. The science journalist covering a public health crisis in this environment is not just trying to communicate accurate information; she is trying to be heard above an overwhelming volume of noise, and the communicative strategies required for this task are fundamentally different from those adequate to the quieter information environment of an earlier era.

Chapter Forty-Nine: The Political Economy of Digital Media in Bangladesh

49.1 The Emergence of the Online News Ecosystem

The transformation of the Bangladeshi media landscape by digital technology has proceeded through several distinct phases, each of which has created specific opportunities and specific problems for science journalism. The first phase, roughly from the early 2000s to the mid-2010s, was characterized by the establishment of online editions of existing print newspapers and the emergence of a small number of news websites that operated without print counterparts. In this phase, digital journalism was primarily understood as an extension of print journalism: the same editorial norms, the same professional hierarchies, and largely the same content models were translated onto the new platform, with the main difference being the addition of hyperlinks and the removal of the constraint of print pagination.

The second phase, roughly from 2013 to 2020, was characterized by the explosion of the number of online news portals in Bangladesh to a number estimated at several thousand by most assessments, the rise of social media as the primary distribution channel for digital journalism, and the emergence of the smartphone as the dominant access device for digital content in Bangladesh. This phase created a situation in which the gatekeeping functions of the established print media, which had always been imperfect but had at least maintained some standards of professional practice, were thoroughly overwhelmed by the volume of online content production. The regulatory framework for online journalism in Bangladesh, which was inadequate from the beginning and remained inadequate through successive legislative interventions, was unable to keep pace with the proliferation of online portals, and the result was an information environment that was simultaneously more diverse and more chaotic than the pre-digital press.

The third phase, from roughly 2020 to the present, has been characterized by the dominance of social media platforms, particularly Facebook and YouTube, as the primary information environment for most Bangladeshi citizens; the emergence of independent digital journalism ventures, including some of significant quality, alongside an enormous volume of low-quality content production; the use of digital tools for political manipulation and state repression alongside their use for civic activism and accountability journalism; and the intersection of

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global AI development with Bangladeshi political and informational dynamics in ways that create challenges without clear precedent in the country's journalistic history.

The specific political economy of digital media in Bangladesh is shaped by several features of the national context that distinguish it from the digital media landscapes of wealthier countries where most of the theoretical and empirical research on platform capitalism has been conducted. Bangladesh's mobile-first internet access, with the overwhelming majority of internet users accessing digital content through smartphones rather than desktop computers, creates a specific set of affordances and constraints for both journalism production and journalism consumption. The dominance of Facebook as the primary social media platform, in a context where Facebook's algorithms and content moderation policies are designed primarily for the North American and European markets and where Facebook's engagement with Bangladeshi stakeholders on content moderation has been substantially less than its engagement with larger and more economically powerful markets, creates a situation in which the informational infrastructure of Bangladeshi democracy is substantially controlled by a private corporation with limited accountability to Bangladeshi citizens or institutions.

The economics of digital journalism in Bangladesh have produced a complex and unstable ecosystem in which a small number of well-resourced news organizations coexist with a vast number of poorly resourced ones, in which the revenue models that sustain journalism are varied and often inadequate to support quality journalism, and in which the economic pressures on journalists, including low wages, lack of job security, and the absence of institutional support for time-intensive investigative and scientific reporting, create severe structural constraints on the quality of journalism that the system can produce. The specific economics of science journalism are particularly challenging: the investment in scientific expertise, source cultivation, and careful verification that quality science journalism requires is incompatible with the high-volume, low-cost content production model that is the economic baseline for most online journalism in Bangladesh.

49.2 Ownership, Capture, and the Political Economy of Online Journalism

The ownership patterns of digital journalism in Bangladesh reflect and intensify the patterns of print journalism ownership documented in earlier parts of this textbook. The major online news operations are overwhelmingly owned by large business conglomerates with diverse interests and strong reasons to manage their media properties for political and commercial advantage rather than journalistic independence. The Daily Star Online, Prothom Alo Online, The Business Standard, and a small number of other operations maintain meaningful separation between ownership and editorial function, but this separation is more exception than rule in the broader online media landscape.

The specific problem of political capture in the online media environment is, if anything, more severe than in print, because the lower costs of establishing online news operations and the lower regulatory barriers to entry have created a large number of outlets that were established primarily as instruments of political influence rather than as journalism enterprises. Some of these outlets are funded by political parties, some by political figures who use them to advance their personal

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interests, and some by business interests that use them to manage their public reputations and attack their commercial rivals. The journalism they produce is formally news content but functionally propaganda, and the difficulty of distinguishing between genuine journalism and political content management in the crowded online environment creates a significant epistemic problem for citizens who rely on online news.

The political economy of online journalism in Bangladesh during the transition period following the August 2024 uprising has been particularly complex. The collapse of the Sheikh Hasina government removed one major source of political pressure on journalism, specifically the systematic use of state power to reward friendly and punish critical media. But it did not eliminate political capture from the media landscape; it shifted the political alignments of capture while maintaining the underlying structural conditions that produce it. Research by the Centre for Governance Studies documented that the "blitzkrieg" attack on The Daily Star and Prothom Alo in February 2025, in which three newspapers owned by the Bashundhara Group published the same critical headline, was a specific and egregious instance of what The Daily Star's editor Mahfuz Anam called the use of newspaper ownership as factory ownership, a deployment of media power in the service of commercial interest rather than journalistic purpose. This incident illustrates how the political economy of media ownership continues to produce systematic distortions in the information environment even in a period nominally committed to media reform.

49.3 The Digital Advertising Economy and Its Consequences for Scientific Reporting

The digital advertising economy, through which the vast majority of digital news content is funded in Bangladesh as globally, creates specific incentive structures that are systematically hostile to quality science journalism. The fundamental logic of the advertising-funded digital news model is that revenue is generated by audience attention, and audience attention is attracted by content that is emotionally engaging, easily digestible, and socially shareable. These characteristics are not well correlated with the characteristics of high-quality science journalism, which tends to be complex, technically demanding, and emotionally ambiguous in the sense that good science communication acknowledges uncertainty rather than providing the definitive answers that generate the strongest emotional responses.

The specific consequence for science journalism is what researchers have called the "science tax": the systematic financial penalty that the digital advertising model imposes on quality science content relative to low-quality viral content. A carefully researched article about the epidemiology of river blindness in northern Bangladesh, reporting the findings of a peer-reviewed study and explaining its limitations and implications with appropriate nuance, will typically generate fewer pageviews, fewer shares, and therefore less advertising revenue than a sensational health claim with no scientific basis that generates fear or outrage. The editorial pressure that this economic reality creates is not usually expressed as explicit instruction to produce bad science journalism; it is expressed as the systematic availability of more resources for the kinds of content that generate more traffic, and the corresponding unavailability of resources for the time-intensive science journalism that generates less.

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The alternative funding models for science journalism in Bangladesh are underdeveloped relative to the scale of the problem. Subscription-based digital journalism, which has emerged as one of the primary alternatives to advertising-based models in wealthier countries, faces significant challenges in Bangladesh given the relatively low incomes of most citizens and the cultural expectation that digital content should be free. Philanthropic and foundation funding for journalism, which has supported significant investigative and science journalism in other contexts, is available in Bangladesh primarily through international development organizations, creating potential concerns about the independence of journalism that relies on international funding in a political environment that is sensitive to perceived foreign influence. Government funding for public interest journalism, in the form of public broadcasting or journalism development funds, has historically been entangled with political pressure in Bangladesh in ways that compromise editorial independence, though the Media Reform Commission's recommendations include proposals for more arm's-length mechanisms that could change this if implemented.

Chapter Fifty: The Science of Misinformation: False Belief, Motivated Reasoning, and the Epistemology of Error

50.1 Defining the Problem: Misinformation, Disinformation, and Malinformation

The terminology for describing false and misleading information in the digital environment has been the subject of significant scholarly debate, and the distinctions between different categories of problematic information are not merely academic; they have direct consequences for how the problem is understood, what interventions are appropriate, and what legal and regulatory frameworks are relevant. The most widely used framework, associated with Claire Wardle and Hossein Derakhshan's influential 2017 report for the Council of Europe, "Information Disorder," distinguishes three categories: misinformation, defined as false information shared without the intent to harm; disinformation, defined as false information shared with the intent to harm; and malinformation, defined as true information shared with the intent to harm.

This framework is useful as a starting point but has been refined and extended by subsequent scholarship. The distinction between misinformation and disinformation depends on the intent of the person sharing the information, which is often not knowable with certainty and which may be irrelevant to the effects of the information in any case: false information spreads and harms regardless of whether the person who shared it intended harm. The category of malinformation, true information shared to harm, is important for understanding phenomena like the weaponization of journalists' personal information by online trolls and the selective disclosure of accurate information to create misleading narratives, both of which are highly relevant in the Bangladeshi context.

More importantly for the science journalist, the taxonomy of information disorder must be integrated with an understanding of why people believe false information in the first place, which requires engagement with the psychology of belief, the social dynamics of information

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transmission, and the structural conditions that make some populations more vulnerable than others to specific types of misinformation. The assumption that false beliefs result primarily from ignorance or insufficient access to correct information, the assumption that underlies the transmission model of science journalism and most simplistic accounts of the misinformation problem, has been thoroughly undermined by empirical research. The evidence consistently shows that access to correct information is neither sufficient nor always necessary to produce accurate beliefs, and that interventions designed simply to provide more correct information frequently fail to change beliefs and sometimes entrench false ones.

50.2 Motivated Reasoning and the Psychology of Scientific Belief

The concept of motivated reasoning, developed in psychology by researchers including Ziva Kunda and elaborated in the political science context by scholars including Dan Kahan of the Yale Cultural Cognition Project, describes the systematic tendency of people to reason in ways that favor their preferred conclusions rather than in ways that impartially evaluate evidence. This is not a description of irrationality in the pejorative sense; it is a description of the actual cognitive processes through which most human beings most of the time form beliefs about complex and contested matters. Motivated reasoning does not mean that people are incapable of rational thought; it means that their rational faculties are often deployed in the service of conclusions that are constrained by identity, group membership, and prior commitment rather than being genuinely open to revision by evidence.

The implications for science journalism and science communication are profound and have been elaborated in a substantial empirical literature. The finding most relevant for science communication practitioners is sometimes called the "boomerang effect" or "backfire effect": the finding, initially reported in some studies, that providing people with corrective information about beliefs they hold with emotional or identity investment sometimes strengthens rather than weakens those beliefs, as the correction is interpreted as an attack on the person's identity or group. The subsequent research literature on this finding has complicated the original picture significantly, with some studies failing to replicate the backfire effect and others finding that it occurs in specific conditions but not others. The current state of the evidence suggests that the backfire effect is real but not universal, occurring particularly in conditions of strong identity investment in the false belief and high perceived threat from the correction.

The cultural cognition dimension of scientific belief, which Kahan's research has documented most comprehensively, is particularly relevant for understanding the specific dynamics of scientific controversy in Bangladesh. Kahan's argument is that people's evaluation of scientific evidence is shaped by their cultural identities in the sense that evidence that supports conclusions compatible with their cultural worldview tends to be accepted more readily than evidence that conflicts with it. This finding has been extended by subsequent research to suggest that the politically polarized reception of scientific claims about climate change, vaccination, and other contested issues is not primarily a function of scientific illiteracy but of cultural identity protection: people who identify strongly with groups that have particular positions on these issues will resist scientific evidence that challenges those positions not because they are uninformed but because accepting the evidence would threaten their group identity.

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In the Bangladeshi context, the cultural cognition dimension of scientific belief operates through the specific configurations of identity, including religious identity, political identity, and the identity of community membership, that shape how Bangladeshi citizens evaluate scientific claims. The reception of scientific information about the health consequences of arsenic in groundwater, for instance, has been shaped by the identity politics of the communities most affected: communities that have strong reasons to distrust the government scientists and NGO researchers who produced the relevant evidence, because those institutions have historically been unreliable allies and occasional exploiters of those communities, will be less receptive to that evidence regardless of its quality. The science journalist who understands this dynamic will approach her coverage differently from the journalist who assumes that more and better information will automatically produce more accurate public understanding.

50.3 The Bangladesh Misinformation Landscape: Empirical Realities

The empirical reality of misinformation in Bangladesh has been documented with increasing precision by a growing fact-checking ecosystem. Research published by Dismislab in January 2026 analyzed the output of nine fact-checking organizations focusing on Bangladesh throughout 2025 and found that those organizations published at least 5,706 fact-check reports, of which 4,131 were identified as unique pieces of misinformation, representing approximately a 30 percent increase over the 3,167 unique items identified in 2024. Two out of every three fact-checks involved political content, half of the misinformation was spread through video, and one in every ten items used artificial intelligence to create or enhance the false content. These numbers, while they represent only the misinformation that fact-checkers identified and documented, are themselves an indication of the scale and evolution of the misinformation challenge Bangladesh faces.

The specific trajectory of AI-generated misinformation in Bangladesh during 2025 and into the 2026 election period represents one of the most significant developments in the country's information environment in the post-transition period. Research published in The Business Standard in January 2026 documented that between July and September 2025, Rumor Scanner identified 310, 320, and 329 cases of misinformation in successive months, with AI-generated or AI-enhanced content explicitly identified in a significant and growing proportion of these cases, including 68 AI-related items in July and 218 video-based items in August. An analysis of 71 AI-generated social media posts from the same period found that 57 were videos and 14 were images, confirming that video content had become the dominant medium for AI-driven propaganda.

The Global Voices analysis published in April 2026 of AI-generated content during the February 2026 election period identified 72 cases in which AI-manipulated content gained significant momentum online, with nearly half of all AI-generated content involving claims of false activities and statements by political leaders. The specific case of the fabricated photograph of DUCSU Vice-President Abu Shadik Kayem, which began circulating on December 14, 2025, became one of the most consequential examples of how AI-generated imagery could be used to construct false political narratives in a high-stakes electoral context.

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For science journalism specifically, the implications of this misinformation landscape are multiple. Scientific misinformation, including false claims about vaccines, about the safety of food and water, about climate science, and about public health measures, circulates within the same informational ecosystem as political misinformation and is amplified by the same algorithmic mechanisms. The fact-checking organizations that have developed capacity to identify and debunk political misinformation have significantly less capacity to identify and debunk scientific misinformation, which requires specialized scientific expertise as well as journalistic investigation. The result is that scientific misinformation in Bangladesh is significantly under-monitored relative to its scale and its potential consequences.

50.4 Science-Specific Misinformation: Case Studies from the Bangladeshi Context

The forms of scientific misinformation most prevalent in Bangladesh reflect the intersection of the country's specific public health challenges, environmental vulnerabilities, and political dynamics with the global patterns of science denial and alternative belief that digital platforms amplify and disseminate. Several categories of science-specific misinformation have been particularly prominent and particularly consequential in the Bangladeshi context.

Health misinformation represents the category of scientific misinformation with the most immediate and most severe consequences for public well-being. The COVID-19 pandemic produced an extraordinary volume of health misinformation in Bangladesh, including false claims about the efficacy of traditional remedies, about the dangers of vaccination, about the origin of the virus, and about the appropriate public health responses. Research on COVID-19 misinformation in Bangladesh found that social media, particularly Facebook and WhatsApp, were the primary channels through which this misinformation spread, and that it reached populations with limited access to alternative sources of accurate health information particularly rapidly. The consequences included vaccine hesitancy, delays in seeking medical treatment, and the adoption of ineffective or harmful alternative treatments that cost lives in ways that are difficult to quantify precisely but are clearly substantial.

Agricultural science misinformation represents a category that receives less attention than health misinformation in the research literature but that may be equally consequential given the importance of agriculture to Bangladesh's economy and food security. False claims about the safety and efficacy of agricultural inputs including fertilizers, pesticides, and genetically modified seeds circulate widely in Bangladesh, shaped by a complex mixture of legitimate concerns about corporate interests in agricultural science, traditional agricultural knowledge that may be either valuable or misleading depending on the specific context, and deliberate misinformation campaigns by parties with interests in promoting or discrediting particular agricultural technologies. The science journalist covering agricultural science in Bangladesh must navigate this complex landscape with both scientific literacy and political awareness.

Environmental science misinformation, including false claims about the severity of climate change, the causes of flooding and river erosion, the consequences of industrial pollution, and the safety of chemical exposures in the garment industry, is produced and circulated by a combination of genuine uncertainty about complex scientific questions and deliberate

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misinformation by economic actors with interests in delaying or preventing regulatory responses to environmental harm. The distinction between genuine scientific uncertainty and manufactured uncertainty, which this textbook has discussed in relation to Naomi Oreskes and Erik Conway's "Merchants of Doubt" framework, is particularly difficult to make in the specific Bangladeshi context where scientific institutions are relatively weak, scientific data is often sparse or of uncertain quality, and the political economy of research funding creates incentives for both understating and overstating environmental risks depending on which funder's interests are at stake.

Chapter Fifty-One: Artificial Intelligence, Deepfakes, and the Existential Crisis of Verification

51.1 The AI Turn in Journalism: Opportunity, Threat, and the Question of Human Judgment

The intersection of artificial intelligence with journalism has generated an enormous volume of commentary, prediction, and practical experimentation over the past several years, and by 2025 and 2026 it is no longer possible to discuss the digital transformation of journalism without confronting AI as a central rather than peripheral element of the analysis. The systematic review of published articles on AI in journalism from 2010 to 2025, published in 2025 and surveying 72 peer-reviewed articles using bibliometric mapping and qualitative thematic synthesis, found a sharp increase in research activity after 2020, with prominent focus areas including automation, misinformation, and ethical governance, and with most studies reflecting cautious optimism alongside serious concerns over bias, transparency, and accountability.

For science journalism, AI creates both genuine capabilities and genuine threats that must be analyzed with precision rather than treated as a uniformly positive or uniformly negative development. The genuine capabilities include several areas that are directly relevant to science journalism practice in Bangladesh. Large language models are capable of rapidly processing and summarizing large volumes of scientific literature in ways that could significantly reduce the time burden of the literature review function that good science journalism requires. AI-powered data analysis tools can identify patterns in large datasets, including environmental monitoring data, public health surveillance data, and agricultural productivity data, that might not be visible to human analysts working manually. Natural language processing tools can assist in the extraction and analysis of information from large bodies of text, including government documents, court records, and institutional reports, that are relevant to investigative science journalism. And AI-assisted translation tools are improving rapidly in ways that could significantly reduce the language barriers that prevent Bangladeshi science journalists from accessing the international scientific literature.

The genuine threats are equally significant and in some respects more urgent in the short term. The AI tools that create the greatest immediate threat to science journalism in Bangladesh are not the tools that journalists themselves use but the tools that bad actors use to produce

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misinformation at scale and with unprecedented sophistication. The development of accessible generative AI tools, including large language models capable of producing plausible-sounding scientific text and image and video generation systems capable of producing convincing synthetic media, has dramatically lowered the cost and skill threshold for producing sophisticated misinformation. The 2025 data from Bangladesh showing that one in ten misinformation items identified by fact-checkers used AI suggests that the use of AI for misinformation production is already well established, and every available indicator suggests that it will increase substantially as the relevant tools become more capable and more widely accessible.

The deepfake dimension of AI-generated misinformation deserves particular attention in the science journalism context because deepfakes create a specific epistemological crisis for a form of journalism that relies on the authority of documented reality. The traditional authority of photographs, video recordings, and audio recordings in journalism has rested on their status as indexical evidence: direct traces of the reality they represent, not merely interpretations of it. The development of AI tools capable of generating synthetic photographs, videos, and audio recordings that are indistinguishable from authentic recordings by visual or auditory inspection fundamentally undermines this epistemic foundation. The science journalist who reports on a video purporting to show a government scientist admitting that a study was manipulated, or a photograph appearing to document environmental contamination that a company denies, can no longer treat the existence of a recording as strong evidence of the reality it appears to document. She must now treat every piece of media as requiring technical verification of its authenticity before it can serve as evidence, and the technical tools required for this verification are not yet widely available or consistently reliable.

The specific case of the Bangladesh election period of 2025-2026 provides the most acute illustration available of the interaction between AI-generated misinformation and the journalism ecosystem. The Global Policy Journal analysis published in February 2026 found that between July and September 2025, fact-checkers documented systematic AI-generated campaigns targeting Bangladesh's political landscape, with these campaigns exclusively favoring certain parties while attacking opponents through synthetic media. The Business Standard's January 2026 analysis documented how AI-generated content was manufacturing consensus ahead of the February 12, 2026 election, with deepfake videos and AI-manipulated images circulating at a scale that overwhelmed the capacity of fact-checking organizations to respond in real time. These developments have implications not only for political journalism but for science journalism, because the techniques of synthetic media production that are being deployed for political manipulation can equally be deployed to manufacture false scientific authorities, fabricated scientific findings, and synthetic evidence of phenomena that have not occurred.

51.2 Algorithmic Bias and Its Consequences for Scientific Information

The concept of algorithmic bias, which describes the systematic tendencies of AI systems to produce outputs that are skewed in ways that reflect the biases of their training data, their designers, and the social contexts in which they are deployed, is one of the most important concepts in contemporary AI ethics and one that has profound implications for science

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journalism in Bangladesh. The analysis published in "The Handbook of Artificial Intelligence and Journalism" in 2025 by Leppänen provides a comprehensive survey of how algorithmic biases manifest in both traditional journalism and AI-supported journalism, noting that while algorithmic bias has been extensively studied in computer science, knowledge about it has yet to fully penetrate the consciousness of the general public and many AI practitioners.

For science journalism, algorithmic bias operates at multiple levels. At the level of content recommendation, the algorithms that determine what news content users see on social media platforms exhibit systematic biases in favor of content that reflects the perspectives, languages, and information environments of the majority populations of the markets for which the algorithms were primarily designed. This creates specific disadvantages for Bangladeshi science journalism, which is produced in a country with a relatively small internet population in global terms, in a language that most AI systems are far less capable of handling than English, and which covers scientific issues, including arsenic contamination, cyclone risk, and jute and textile science, that are not prominent in the training data of global AI systems.

The "data orientalism" concept developed by researcher Kotliar, cited in the algorithmic journalism literature, is particularly relevant here: the systematic construction of the non-Western world as an object of data extraction rather than as a source of data production by AI systems trained primarily on Western data creates a form of epistemic colonialism in which the algorithmic mediation of information systematically disadvantages the self-representation of non-Western communities and privileges the representation of those communities by Western sources. For Bangladeshi science journalism, this means that the AI systems that increasingly mediate the digital information environment in Bangladesh are trained on data that systematically underrepresents Bangladeshi scientific knowledge, Bangladeshi journalistic standards, and the specific informational needs of Bangladeshi citizens.

At the level of automated content generation, the AI language models that are increasingly being used in journalism, including in Bangladesh, exhibit biases toward the perspectives, assumptions, and framings that are most prevalent in their training data. Since the overwhelming majority of the scientific literature that these models have been trained on is published in English by researchers in high-income countries, the models' understanding of science is systematically skewed toward the research agendas, methodological assumptions, and interpretive frameworks of those contexts. The AI system that is asked to generate a summary of the scientific evidence on a particular topic will produce a summary that reflects the priorities of the research literature that shaped its training, which may not adequately represent the scientific questions most relevant to Bangladesh or the scientific perspectives of Bangladeshi and other Global South researchers.

51.3 Detecting Synthetic Media: The Technical and Methodological Challenge

The technical challenge of detecting AI-generated synthetic media, including deepfake videos, AI-generated photographs, and AI-generated text, is one of the most rapidly evolving areas in the intersection of AI and journalism, and the science journalist in Bangladesh must understand both the current state of detection capabilities and their limitations. The fundamental problem of

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synthetic media detection is that it is a technological arms race: every advance in detection capability is accompanied by advances in generation capability, as the models used to generate synthetic media can be trained adversarially against detection systems to produce outputs that defeat the available detection methods.

The current state of the art in deepfake detection, as of 2025 and 2026, involves a combination of technical analysis tools that examine the statistical properties of digital media files for artifacts characteristic of AI generation, behavioral analysis that looks for inconsistencies in facial movement, blinking patterns, and audio-visual synchronization that are characteristic of synthetic generation but difficult for human perception to identify, and provenance analysis that examines the metadata and distribution history of digital media files to identify signs of artificial creation or manipulation. None of these methods is fully reliable: the best available detection tools have significant false positive and false negative rates, and the rapid improvement of generation models means that detection tools trained on older generation models may be ineffective against newer ones.

For the science journalist in Bangladesh, the practical implications of these limitations are significant. She cannot reliably verify the authenticity of digital media files using technical detection tools alone, particularly given that the most sophisticated detection tools are not readily accessible to journalists working outside well-resourced institutional contexts. She must therefore develop a journalistic verification methodology that does not rely primarily on technical detection and that is based instead on the principles of independent corroboration, source verification, and the systematic triangulation of multiple independent sources of evidence that have always been the foundations of reliable investigative journalism. The AI transformation of the information environment does not create a need for entirely new journalistic epistemology; it creates a need to apply existing journalistic epistemological principles with greater rigor and greater technical awareness than was previously necessary.

The specific vulnerability of science journalism to synthetic media manipulation is related to the complexity of the subjects it covers. A deepfake video of a scientist announcing false findings is potentially more dangerous than a deepfake video of a politician making a false statement, because the authority attached to scientific expertise is more difficult for most citizens to evaluate critically than the authority attached to political statements. Most citizens have some framework for evaluating the credibility of politicians, based on their knowledge of the politician's track record, their awareness of the political context in which the statement is made, and their understanding of political incentives. Far fewer citizens have an equivalent framework for evaluating the credibility of scientific claims, and the cultural authority of science in Bangladesh, which is substantial even among populations that are suspicious of particular scientific institutions, creates a specific vulnerability to the strategic deployment of false scientific authority.

Chapter Fifty-Two: The Legal Framework for Digital Journalism: From the DSA to the Cyber Security Ordinance 2025

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52.1 The Evolution of Digital Legislation in Bangladesh: A Legal History of Control and Resistance

The legal framework governing digital communication and online journalism in Bangladesh has evolved through a series of legislative interventions that reveal, with particular clarity, the persistent tension between the state's interest in controlling the digital information environment and the press freedom and civil society rights that democratic governance requires. The history of this legislation is not a history of linear progress toward greater freedom; it is a history of specific state interventions responding to specific political contexts, producing instruments that have been systematically misused regardless of their stated purposes, and of the resistance to those instruments by civil society organizations, international human rights bodies, and journalists at constant personal risk.

The Information and Communication Technology Act of 2006, passed under the BNP-Jamaat coalition government, established the initial legal framework for regulating digital communication in Bangladesh and introduced provisions that were subsequently used extensively for the prosecution of journalists and political dissidents. The Act's provisions on defamation, on criticism of the state, and on offenses against religion created the template for subsequent legislation: broad, vaguely defined offenses that provided prosecutors with enormous discretion to target content for prosecution on the basis of its political inconvenience rather than any genuine harm it caused.

The Digital Security Act of 2018, introduced by the Sheikh Hasina government ostensibly to address cybercrime, represented a dramatic expansion and intensification of digital speech regulation. The Clooney Foundation for Justice and the Centre for Governance Studies, in their November 2025 report analyzing 222 cases involving 396 journalists, documented comprehensively how the DSA was used systematically to punish reporting and criticism online during the Hasina period. The report, published in advance of the February 2026 elections, found through interviews with 30 affected journalists that the DSA functioned primarily as a political tool for silencing inconvenient journalism rather than as a mechanism for addressing genuine cybersecurity threats.

The Cyber Security Act of 2023, passed as a nominal replacement for the DSA shortly before the fall of the Hasina government, was widely criticized by civil society organizations and international human rights bodies as failing to address the fundamental problems of its predecessor. Article 19 and Human Rights Watch, among other organizations, documented that the CSA retained provisions capable of being used for the same abusive purposes as the DSA, and that the process of its adoption lacked the broad stakeholder consultation that would have been necessary to produce a genuinely rights-compatible instrument.

The Cyber Security Ordinance of 2025, adopted by the interim government following the August 2024 uprising, represents the most significant legislative reform of the digital legal framework in Bangladesh's history, though its adequacy relative to international human rights standards remains contested. The development of the ordinance began with a draft released by the ICT Division on December 1, 2024, followed by a public feedback period that closed on December 4,

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a recommendation by the Advisory Council on December 24, and final approval in early May 2025. This process of dialogue and participation was a significant departure from previous legislative practice and reflected at least a nominal commitment to inclusive policymaking.

The most important substantive change introduced by the 2025 Ordinance was the repeal of nine controversial sections from the Cyber Security Act 2023, sections that had been widely criticized for enabling harassment of journalists, political dissenters, and ordinary citizens. These included vague and oppressive clauses punishing criticism of national icons or the spreading of "false information," the removal of which significantly reduced the most immediately threatening provisions for journalism practice. The Ordinance also introduced what analysts have described as a historic provision recognizing Internet access as a citizen's right, placing Bangladesh alongside a relatively small number of countries that have formally recognized digital connectivity as a dimension of modern citizenship.

The jurisprudential analysis of the 2025 Ordinance reveals both its genuine advances and its continuing limitations. The advance represented by the recognition of internet access as a right has important implications for the positive obligations of the state with respect to the digital information environment: if internet access is a right, then systematic exclusion of citizens from internet access, whether through economic barriers, technical censorship, or the chilling effect of legal threat, constitutes a violation of that right that the state is obliged to address. This framing provides important advocacy resources for reformers pushing for greater digital inclusion and press freedom.

The continuing limitations of the 2025 Ordinance, identified by Article 19 and the joint statement of international human rights organizations published in February 2025, include ambiguity in the definitions of prohibited content that leaves journalists vulnerable to prosecution under provisions targeting "hate speech" or "religious incitement" that lack clear and narrowly tailored definitions. The introduction of a national cyber security agency under the Ordinance raises concerns about the independence and accountability of this new institution: the creation of a powerful regulatory body without robust independence guarantees and clear accountability mechanisms creates the conditions for its eventual capture by whatever political interest controls the state at any given moment. And the Telecommunication Ordinance Amendment of 2025, analyzed by Article 19 in December 2025, introduces provisions governing content on digital platforms, including traceability requirements, content removal timelines, and codes of ethics, that create new potential mechanisms for state control of online journalism.

52.2 The Cyber Protection Ordinance and Personal Data Protection Ordinance: Unfinished Business

The concurrent development of the Cyber Protection Ordinance 2025 and the Personal Data Protection Ordinance 2025 by the interim government created additional layers of digital legal governance whose implications for science journalism are significant and in some respects alarming. The joint statement of concern published by Human Rights Watch and other international organizations in February 2025 identified that the drafts of both ordinances failed to

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address broader systemic challenges in cyberspace governance in alignment with Bangladesh's constitutional framework and international human rights obligations.

The Personal Data Protection Ordinance is directly relevant to science journalism in several ways. The protection of personal data is important for the protection of journalistic sources, since the forced disclosure of data about who has communicated with a journalist would undermine source confidentiality. At the same time, data protection regimes can create new barriers to journalistic access to information in the public interest if they are interpreted to prevent journalism organizations from collecting, processing, and publishing information about individuals, including public officials and corporate executives, without those individuals' consent. The balance between individual privacy and the public interest in transparency and accountability is one of the most contested dimensions of data protection law globally, and the Bangladeshi data protection framework will need to navigate this balance carefully if it is to serve the interests of both privacy rights and press freedom.

The concept of data sovereignty, which has become increasingly important in international debates about the governance of the digital information environment, has specific implications for Bangladesh's relationship with the global platforms that host most Bangladeshi digital journalism. Data sovereignty refers to the principle that data about a country's citizens should be subject to the legal jurisdiction of that country rather than the jurisdiction of the country where the platforms that host it are incorporated. For Bangladesh, the practical question is whether the government can effectively assert its legal jurisdiction over the data practices of Facebook, Google, and other major platforms that are incorporated in the United States but that serve hundreds of millions of Bangladeshi users. The answer, as of 2026, is that Bangladesh's ability to assert effective regulatory jurisdiction over global platforms is limited by the same asymmetry of power that characterizes its relationship with global pharmaceutical, chemical, and agricultural corporations, and that meaningful platform accountability will require both domestic regulatory capacity building and international cooperation in ways that are not yet fully realized.

52.3 The Weaponization of Law Against Digital Science Journalism

The pattern of legal weaponization against journalism that the Digital Security Act enabled has not been fully arrested by the legislative reforms of the 2025 period, and the science journalist in Bangladesh must understand the specific mechanisms through which law can be used as an instrument of suppression rather than protection in order to navigate the legal environment with appropriate sophistication. The Clooney Foundation's analysis of 222 DSA cases documents a range of prosecutorial strategies, including the filing of cases by political proxies rather than directly by state actors, the use of bail denial and pre-trial detention as a form of extrajudicial punishment that avoids the need for conviction, the coordinated filing of multiple cases by multiple complainants to overwhelm the defendant's legal resources, and the strategic timing of cases to disrupt specific reporting projects.

For science journalism specifically, the legal weaponization risk is concentrated in particular areas of reporting that intersect with powerful economic and political interests. The journalist who investigates the environmental record of a politically connected company faces legal risk

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not just from criminal prosecution under digital speech laws but from civil defamation claims and regulatory harassment that can be equally effective as silencing mechanisms. The journalist who reports on the pharmaceutical industry faces the risk of legal action from companies that have both the resources and the legal sophistication to pursue extended litigation. And the journalist who challenges official government scientific claims, whether about water quality, about the safety of a pesticide, or about the prevalence of a disease, faces the risk of prosecution under provisions that, despite the reforms of the 2025 Ordinance, still give state actors significant discretion to define the publication of inconvenient facts as the spreading of "misinformation" or "harmful" information.

The international legal framework provides important resources for the defense of digital science journalism against legal weaponization. The UN Human Rights Committee's General Comment 34 on freedom of expression, which specifies that restrictions on freedom of expression must be provided by law, must be necessary and proportionate to the legitimate aim invoked, and must not be applied in ways that punish legitimate journalism, provides a clear international standard against which the Bangladeshi legal framework can be assessed and against which specific prosecutions of science journalists can be challenged. The UN Special Rapporteur on Freedom of Expression has consistently applied this standard to digital speech laws globally and has specifically commented on Bangladeshi digital legislation on multiple occasions, providing an important international accountability mechanism even in the absence of a formal enforcement mechanism.

Chapter Fifty-Three: Platform Governance, Data Sovereignty, and the Global Information Order

53.1 The Unequal Architecture of Global Platform Governance

The governance of global digital platforms, including the rules about what content is permitted, how content moderation is carried out, how data is collected and used, and how the algorithms that mediate content circulation are designed, is one of the most consequential and most inequitable dimensions of the contemporary global information order. The five or six global platforms that dominate the digital information environment in Bangladesh, including Facebook, YouTube, TikTok, WhatsApp, and Google Search, are all American corporations subject primarily to American law, American corporate governance norms, and the political pressures of the American democratic system. The content moderation decisions they make, the algorithmic choices they implement, and the regulatory frameworks they are subject to all reflect primarily the concerns and interests of the American market and the American policy environment, with the interests and concerns of users in countries like Bangladesh playing a distinctly secondary role.

The specific consequences of this asymmetry for Bangladesh's digital information environment have been documented in multiple research contexts. The content moderation policies of Facebook, for instance, are developed primarily in English and applied primarily to English-

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language content; the company's capacity to moderate Bangla-language content is substantially weaker, meaning that harmful content in Bangla, including political misinformation, hate speech, and incitement to violence, reaches larger audiences and remains available for longer than equivalent content in English before being detected and removed. The algorithmic amplification of content that generates strong emotional responses applies equally to content in Bangla and in English, but the algorithmic systems that are supposed to identify and reduce the amplification of harmful emotional content are much better calibrated for English than for Bangla.

The political science of platform governance has been analyzed through several competing frameworks. The regulatory capitalism framework, associated with scholars including Braithwaite and Drahos, treats platform governance as a form of private regulatory power that operates quasi-governmental functions in the digital space and that should be subject to corresponding democratic accountability. The multistakeholder framework, which has been influential in international internet governance institutions including the Internet Governance Forum, argues for an inclusive governance model in which civil society, business, and government participate on equal terms in the development of platform governance standards. The sovereignty framework, which is most prominently represented by China and Russia but which has also been articulated in modified forms by the European Union, argues that national governments have the right and the responsibility to assert regulatory jurisdiction over platform operations within their territories.

Bangladesh's position in this governance debate is structurally awkward. The country lacks the market size and economic leverage of the European Union, which has been able to extract significant regulatory concessions from global platforms through the General Data Protection Regulation and the Digital Services Act. It lacks the geopolitical power of China and Russia to effectively enforce a sovereignty-based governance model against platform resistance. And it lacks the institutional capacity of the most effective multistakeholder governance systems, which require sophisticated civil society organizations and government agencies capable of engaging effectively in technical and legal debates about platform governance. The result is that Bangladesh's relationship with global platforms is substantially asymmetric: the platforms operate in Bangladesh under conditions that are substantially more permissive than those they face in the European Union, with less accountability for the harms they produce, less transparency about their algorithmic operations, and less responsiveness to the concerns of Bangladeshi users and institutions.

53.2 The Facebook Problem: Bangladesh's Dominant Platform and Its Governance Failures

The specific governance failures of Facebook in the Bangladeshi context deserve extended analysis because Facebook's dominance in Bangladesh's digital information environment makes its governance decisions unusually consequential for the quality of public information and the safety of journalists. Facebook is, for a substantial proportion of Bangladeshi internet users, not simply a social media platform but the internet itself: the primary channel through which they access news, communicate with family and friends, conduct business, and participate in public life. This structural dominance gives Facebook's content moderation decisions, its algorithmic

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amplification choices, and its data practices extraordinary power over the information environment of a country of more than 170 million people.

The governance failures of Facebook in the Bangladesh context include several distinct categories. The most severe and most documented is the platform's failure to prevent its infrastructure from being used to organize and amplify violence against minority communities and political opponents. The Rohingya crisis in Myanmar, in which Facebook's algorithmic amplification of anti-Rohingya hate speech was documented as a contributing factor in the violence that produced one of the world's largest refugee crises and caused enormous numbers of Rohingya refugees to flee into Bangladesh, provided the most extreme illustration of what inadequate content moderation in the Bangla and Burmese-language environment can produce. The lessons that Facebook drew from this episode appear to have been insufficient to prevent subsequent failures of content moderation in the Bangladeshi context, including during the August 2024 uprising period and the subsequent electoral period.

The algorithmic amplification of scientific misinformation on Facebook in Bangladesh is a specific and urgent governance problem. The research published in the Global Journal of Human-Social Science in 2025, examining the ethical aspects of AI-generated disinformation on Facebook in Bangladesh through twenty semi-structured interviews with editors, journalists, technologists, and fact-checkers alongside a case study of 2020-2025 AI-generated or manipulated content, found that Facebook's algorithms promote sensational, biased, and unethical content for engagement at the expense of truth and accuracy, destroying ethical values like truth, responsibility, and justice. The study also found entrenched disinformation on a large number of topics with massive spikes closer to election periods.

The responsibility of Facebook for the consequences of its governance failures in Bangladesh is a contested legal and ethical question. The platform's standard position is that it is a neutral intermediary that facilitates communication between users and bears no editorial responsibility for the content its users produce. This position has been legally enshrined in the United States through Section 230 of the Communications Decency Act, which provides platforms with broad immunity from liability for user-generated content. The platform's critics, including many of the civil society organizations and journalists' associations that have documented Facebook's governance failures in Bangladesh, argue that a platform that actively makes algorithmic decisions about what content to amplify and what content to suppress is not a neutral intermediary but an active participant in the production of the information environment, and that this active participation should carry commensurate accountability for the harms it produces.

53.3 The WhatsApp Problem: Encrypted Messaging and the Limits of Transparency

The role of WhatsApp, the encrypted messaging platform also owned by Meta (Facebook's parent company), in the circulation of misinformation in Bangladesh presents a distinct and in some ways more difficult governance challenge than Facebook's open social network. WhatsApp's end-to-end encryption, while an essential protection for journalistic source confidentiality and for the private communication of citizens under surveillance by authoritarian governments, also makes it technically impossible for the platform to monitor or moderate the

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content of messages, and creates conditions under which misinformation can spread rapidly through encrypted group chats without any of the friction that applies to content on open social networks.

Research on WhatsApp misinformation in India and Brazil, which are the contexts where this phenomenon has been most extensively studied, provides relevant comparative evidence for understanding the dynamics of WhatsApp misinformation in Bangladesh. The studies consistently find that WhatsApp group chats function as trust amplifiers: content shared within a WhatsApp group is received with higher credibility than the same content shared on an open social network, because the group context implies endorsement by people the recipient knows and trusts. This trust amplification effect makes WhatsApp a particularly effective vector for misinformation, because the social trust embedded in the group relationship reduces critical scrutiny of the shared content.

The specific governance dilemma that WhatsApp creates is between the privacy and security values served by strong encryption and the public interest in preventing the platform from functioning as an unmonitored channel for mass misinformation distribution. This dilemma has no fully satisfactory resolution, and the various technical proposals that have been advanced for addressing WhatsApp misinformation, including weakening encryption to enable platform monitoring, adding metadata-based traceability to messages, and limiting message forwarding, all involve trade-offs that are ethically and politically contested. The Bangladesh government's interest in WhatsApp traceability, which is reflected in the Telecommunication Ordinance Amendment's provisions on traceability, is driven by a combination of legitimate concerns about misinformation and illegitimate concerns about the platform's use by political opponents, and the science journalist must be alert to the difference between these motivations when evaluating government regulation proposals.

Chapter Fifty-Four: Fact-Checking, Verification, and the Emerging Ecosystem of Information Accountability

54.1 The Theory and Practice of Fact-Checking in the Digital Age

The practice of fact-checking, understood as the systematic verification of specific factual claims made by public figures or circulated in public discourse, has become one of the most discussed and most contested practices in contemporary journalism globally, and the Bangladeshi fact-checking ecosystem has developed significantly since the mid-2010s to produce what is now one of the more developed fact-checking infrastructures in South Asia. Understanding both the possibilities and the limitations of fact-checking as a response to the misinformation crisis is essential for the science journalist, both because she may be called upon to contribute to fact-checking operations in her areas of scientific expertise and because the fact-checking model itself raises important theoretical questions about the epistemology of journalism.

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The theoretical justification for fact-checking as a journalistic practice rests on the assumption that the core function of journalism in a democracy is the reliable provision of accurate information, and that systematic verification of factual claims is the mechanism through which journalism fulfills this function. This assumption is not as simple as it sounds. The question of what counts as a "fact" for purposes of fact-checking is often more complex than the format suggests, particularly in the domain of science journalism where many claims that appear to be factual are actually statements of probability, statements about the state of a research literature with significant internal variation, or statements of interpretation that depend on contested models or assumptions. The fact-check that rates a statement about climate change as "false" because it overstates the certainty of a scientific projection, while technically accurate in its assessment of the certainty claim, may mislead its readers about the underlying scientific question if it creates the impression that the science is more uncertain than it is.

Research on the effects of fact-checking on public opinion published in 2024 and 2025, including the work examining whether attribution of fact-checking to AI affects its effectiveness, confirms that fact-checking can effectively correct false beliefs under certain conditions, but that the conditions under which it is most effective are not necessarily the conditions most commonly found in the media environments where misinformation is most prevalent. Studies have found that fact-checking is most effective when readers are not strongly committed to the false belief for identity reasons, when the correction is presented by a source the reader trusts, and when the correction is seen before the false belief is initially encountered, what researchers call "prebunking" or "inoculation." These conditions are more likely to be met for misinformation about obscure or low-salience topics than for misinformation about politically charged topics, which is precisely the category of misinformation that most threatens democratic governance.

54.2 Bangladesh's Fact-Checking Organizations and Their Scientific Competence

The nine fact-checking organizations operating in Bangladesh that were documented in the Dismislab analysis of 2025 represent a genuinely significant development in the Bangladeshi media ecosystem, and their existence as an organized sector of the information environment is an important resource for the science journalist and for informed citizens. The major fact-checking organizations operating in Bangladesh include Rumor Scanner, BoomBD, NewsChecker, Fact Crescendo, Fact Watch, AFP Bangladesh, Ajker Patrika, Dismislab, and The Dissent, each with somewhat different areas of focus, different methodological approaches, and different institutional affiliations.

The scientific competence of these fact-checking organizations, meaning their capacity to evaluate and fact-check claims that require specialized scientific expertise to assess, varies considerably and is generally lower than their capacity to assess political and historical claims. This is a natural consequence of the development trajectory of the fact-checking sector, which grew primarily in response to political misinformation and developed the expertise, the source networks, and the methodological tools appropriate to that domain first. The extension of fact-checking capacity to cover scientific claims in fields including public health, environmental science, agricultural science, and climate science requires the development of specialized scientific expertise, partnerships with scientific institutions, and methodological approaches that

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are appropriate to the specific characteristics of scientific knowledge, including its probabilistic nature, its reliance on technical evidence that is not directly accessible to general audiences, and the existence of genuine scientific controversy that must be distinguished from manufactured controversy.

The relationship between science journalists and fact-checkers in Bangladesh is one that deserves more attention and more deliberate cultivation than it currently receives. The science journalist's specialized expertise in evaluating scientific claims, in understanding the structure and limitations of the scientific literature, and in identifying the patterns of manufactured doubt and scientific misinformation that this textbook has described, is precisely the expertise that fact-checking organizations need to assess science-related misinformation effectively. The development of formal partnerships between science journalists and fact-checking organizations, involving both the contribution of scientific expertise to fact-checking operations and the contribution of fact-checking methodological rigor to science journalism practice, would strengthen both sectors.

The challenge of scaling fact-checking to match the volume of misinformation in Bangladesh's digital environment is one that the fact-checking community itself has recognized as fundamental. The observation by Shawkat Hossain, head of online at Prothom Alo, at the January 2026 event on Bangladesh's misinformation threat ahead of the elections, that traditional fact-checking approaches will not work anymore and that fact-checkers may find it "impossible" to keep up with rapid advances in AI, expresses the essential dilemma with admirable directness. The gap between risk and capacity identified by Digitally Right's research, described as "dangerously wide" in the January 2026 study, is not a problem that can be solved by more funding for individual fact-checking organizations alone; it requires a more fundamental transformation of how the information accountability ecosystem is structured.

54.3 AI-Assisted Fact-Checking: Possibilities and Epistemological Risks

The proposal to use AI tools to assist or scale fact-checking operations has been advanced by numerous researchers and practitioners as a potential response to the capacity gap between misinformation volume and fact-checking resources. The February 2025 research in Journalism Practice, mapping global emerging scholarly research and practices of AI-supported fact-checking tools, found that AI-assisted fact-checking is a growing area of both research and practice, particularly in Europe and Latin America, with a range of tools available for tasks including claim detection, evidence retrieval, consistency checking, and automated preliminary assessment of factual claims.

The epistemological risks of AI-assisted fact-checking are at least as significant as its potential benefits, and they deserve careful analysis. The most fundamental risk is the confusion of AI confidence with factual accuracy: AI language models can generate highly confident-seeming assessments of factual claims even when their underlying evidence base is weak, outdated, or factually incorrect. The phenomenon of "hallucination," by which AI language models generate plausible-sounding but factually false statements, is particularly problematic in the context of fact-checking because fact-checkers rely on the accuracy of the information sources they use to

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make verification assessments. An AI-assisted fact-checking system that draws on a language model's training knowledge rather than on verified external sources may produce assessments that are systematically biased by the errors and gaps in that training knowledge.

The research on how audiences respond to AI involvement in fact-checking, including the study published in Science and Technology in Society in 2024, found that attributing a fact-check to AI did not enhance its effectiveness compared to attribution to a human source, even among respondents with strong machine heuristic beliefs, though providing transparency about the fact-checking process reduced partisan gaps in perceived fact-checker credibility. This finding suggests that the legitimacy of fact-checking depends on transparency about its methods, including whether those methods involve AI assistance, and that the use of AI for fact-checking creates communication obligations around disclosure that have not yet been consistently addressed in practice.

Chapter Fifty-Five: Digital Science Journalism: Formats, Audiences, and the Epistemology of Engagement

55.1 From Text to Multimedia: The Transformation of Science Communication Formats

The digital environment's expansion of the available formats for science communication beyond text to include audio, video, interactive data visualization, and immersive and gamified formats creates both opportunities and responsibilities for science journalists that the traditional print-focused model of science journalism training has not fully prepared them for. The question of format is not merely a technical question about how content is produced; it is an epistemological question about the relationship between the form in which information is communicated and the knowledge that communication makes possible.

The specific affordances and limitations of different formats for science communication in Bangladesh deserve careful analysis. Long-form text journalism, the traditional format of print science journalism, is well-suited to the communication of complex, nuanced, and evidence-rich scientific analysis, but it demands a level of sustained reading attention that is increasingly difficult to attract in the digital attention economy, and it is accessible only to literate audiences with the educational background to engage with technical content. In a country where functional literacy, defined as the ability to read and comprehend complex texts rather than merely to decode written text, remains significantly below universal levels, text-based science journalism reaches an important but limited audience.

Audio journalism, including both traditional radio and the rapidly growing podcast format, has specific affordances for science communication in Bangladesh that are closely related to the country's linguistic situation. The spoken Bangla of audio journalism is more accessible to a broader range of listeners than the written Bangla of print journalism, which is more formal and more influenced by Sanskrit and Persian borrowings that are less familiar to speakers with limited formal education. Community radio, which has developed significantly in Bangladesh

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with the support of various NGOs and development organizations, has demonstrated particular promise as a vehicle for science communication in rural and remote communities, combining the accessibility of the spoken word with the local relevance of community-based production.

Video journalism on YouTube and similar platforms has emerged as one of the most rapidly growing sectors of digital science communication in Bangladesh, driven by the increasing affordability of smartphone video production and the enormous appetite for video content among Bangladeshi internet users. The challenges for quality science journalism in this format are significant: the production quality requirements are higher, the verification challenges of video content are more complex, and the economics of YouTube's recommendation algorithm create incentives for sensationalism and simplification that are particularly damaging for science communication requiring nuance and complexity. The science journalist who is developing a YouTube presence must navigate the tension between the algorithm's preference for emotionally engaging content and her commitment to scientifically accurate content that may be less algorithmically rewarded.

Interactive data visualization represents a format with particular potential for science journalism in Bangladesh given the country's rich data environments in areas including climate monitoring, public health surveillance, and agricultural production. The ability to present complex data in interactive forms that allow users to explore the data themselves, to test their own hypotheses, and to understand the uncertainty and variability in the underlying data, addresses some of the most significant limitations of traditional text-based science journalism in a way that can be both more accurate and more engaging. The development of data journalism capacity in Bangladesh, including both the technical skills for creating interactive visualizations and the journalistic judgment for deciding what data stories to tell and how, is one of the most important areas of investment for science journalism development.

55.2 Audience Research and the Science Journalist's Knowledge of Her Readers

The science journalist who does not know who her audience is, what they already know and believe about the scientific issues she covers, what their information needs are, and how they access and evaluate science information, is working in an epistemological vacuum that makes it impossible to optimize her journalism for the democratic function it is supposed to serve. The development of systematic audience research as a component of science journalism practice is therefore not merely a business concern but an epistemological one.

The specific challenge of audience research for science journalism in Bangladesh is that the relevant audiences are extremely diverse in terms of educational background, linguistic access, digital literacy, and prior knowledge of scientific issues, and that the mainstream media's implicit model of the "general public" as educated, urban, Dhaka-based, and English-literate obscures this diversity in ways that systematically disadvantage the majority of Bangladeshi citizens who do not fit this model. The science journalist who optimizes her journalism for the audience of The Daily Star Online or the Prothom Alo website is reaching an important audience but is missing the majority of Bangladeshis who are not served by those outlets, and whose information needs

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about the scientific issues that most directly affect their lives are no less important and no less real.

The model of audience as passive consumer, which has shaped most journalism practice historically, is being challenged by the interactive possibilities of the digital environment, which allow audiences to respond, to share, to produce content of their own, and to participate in the journalistic process in various ways. The science journalist who conceives her audience as co-producers rather than passive recipients, who invites expert members of affected communities to share their experiential knowledge, who uses the interactive possibilities of digital media to include audience expertise in the verification and contextualization of scientific information, is doing something that the transmission model of science journalism could not accommodate and that the dialogue model this textbook has advocated throughout is designed to enable.

55.3 The Engagement Dilemma: Accuracy versus Attention in the Digital Environment

The fundamental tension of digital science journalism is the tension between the epistemic requirements of quality science communication, which demand accuracy, nuance, uncertainty acknowledgment, and complexity, and the attention economics of the digital environment, which reward simplicity, emotional impact, definitiveness, and novelty. This tension is not new to journalism; the tabloid press of the nineteenth and twentieth centuries was organized around very similar priorities, and the struggle for quality journalism against commercial incentives for sensationalism has been a constant feature of journalism history. What is new about the digital environment is the scale, the speed, and the algorithmic systematicity with which the attention economy's preferences are expressed and enforced.

The science journalist navigating this tension has several strategies available that allow her to maintain scientific integrity while competing for attention in the digital environment, but each of these strategies involves trade-offs that must be understood clearly. The strategy of narrative journalism, in which scientific information is embedded in compelling human stories that engage emotional and personal interest, can be highly effective at reaching broad audiences and can produce journalism that is both accurate and genuinely engaging. But the narrative frame also creates specific risks of distortion: the selection of an individual story to illustrate a systemic phenomenon inevitably emphasizes some aspects of the phenomenon while downplaying others, and the emotional investment that narrative generates can make it harder for audiences to hold the appropriate level of uncertainty about the scientific claims embedded in the story.

The strategy of controversy journalism, in which science journalism is organized around scientific disputes, debates between experts, and contested findings, can generate high engagement but creates serious risks of manufacturing the impression of greater scientific uncertainty than actually exists, particularly on questions like climate change or vaccine safety where there is strong scientific consensus that public controversy does not reflect. The responsible use of controversy as an engagement strategy in science journalism requires clear and consistent signals about the relationship between the dispute being covered and the broader state of scientific evidence, and the failure to provide these signals is one of the most consequential epistemic failures in contemporary science journalism.

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Chapter Fifty-Six: Surveillance, Digital Safety, and the Protection of Sources in the Digital Environment

56.1 The Surveillance State and the Science Journalist

The capacity of modern states to conduct electronic surveillance of their citizens, including journalists and their sources, has been transformed by digital technology in ways that create specific and serious risks for science journalism in Bangladesh. The documents revealed by Edward Snowden in 2013 about the NSA's surveillance programs were global in their implications, but for countries like Bangladesh, where state surveillance capacity is more limited than in the United States or United Kingdom but where the willingness to use surveillance against journalists and political opponents is arguably higher, the relevant concern is not primarily about the surveillance capabilities of foreign intelligence services but about the domestic surveillance infrastructure that the Bangladeshi state has developed and is continuing to develop.

The specific surveillance capabilities available to the Bangladeshi state include the legal authority to compel telecommunications companies to disclose call records and message metadata, a technical infrastructure of internet monitoring established in part through the BTRC, and the use of both domestically developed and commercially available surveillance tools for monitoring online communication. The legal framework for state surveillance in Bangladesh, as documented by civil society organizations including Digitally Right, has historically provided inadequate protection for the privacy of journalists' communications, and the reforms of the 2025 legislative period have not fully addressed this gap.

The implications for science journalism are direct and serious. The journalist who is investigating a story about the pharmaceutical industry's influence on government drug regulation, or about the environmental damage caused by a politically connected company, or about the falsification of public health data by a government agency, is working on material that those with power have strong reasons to prevent from reaching the public, and the electronic communications she uses to conduct her investigation may be accessible to those she is investigating. The source who provides a journalist with information about institutional wrongdoing faces the risk that the digital traces of their communication with the journalist will be discoverable by the institution they are exposing, and this risk may deter sources from coming forward even when they have information that is essential to the public interest.

The practical principles of source protection in the digital environment are therefore a fundamental component of the science journalist's professional formation, not an advanced topic reserved for specialists in investigative journalism. Every science journalist who covers topics where institutional interests are at stake, which is to say almost every science journalist in Bangladesh, must understand the basic principles of digital security: the use of end-to-end encrypted communication for sensitive conversations, the practice of operational security in how she handles information about her sources, the management of her digital devices and accounts

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in ways that reduce the risk of unauthorized access, and the legal rights she has to refuse to disclose source identities even under judicial pressure.

56.2 Digital Safety Training and the Institutional Responsibilities of News Organizations

The digital safety of journalists is not solely or even primarily an individual responsibility; it is an institutional responsibility that falls on the news organizations that employ journalists and on the professional organizations that support them. The provision of digital safety training, of secure communication tools and infrastructure, of legal support for journalists facing surveillance-related legal challenges, and of the institutional policies and culture that enable journalists to practice digital security without professional penalty are all institutional responsibilities that Bangladeshi news organizations have been slow to fulfill.

The evidence collected by the Coalition for Women in Journalism and other organizations on gendered patterns in digital harassment, discussed in Part Five of this textbook, is directly relevant to the institutional dimensions of digital safety because gendered harassment is a specific form of digital threat that requires specific institutional responses. The news organization that provides digital safety training on the technical tools of secure communication without also addressing the gendered dimensions of online harassment, including the forms of harassment that women journalists face and the institutional culture changes required to support women journalists facing harassment, is providing incomplete digital safety support.

The international organizations that have developed digital safety resources for journalists, including the Committee to Protect Journalists, the Digital Defenders Partnership, and Access Now, have produced a substantial body of practical guidance that is relevant to Bangladeshi science journalists but that has not been systematically integrated into Bangladeshi journalism education or professional development programs. The development of a Bangladesh-specific digital safety curriculum, adapted to the specific threat environment, legal framework, and technical infrastructure of Bangladesh, is an urgent priority for journalism education reform that both Part Four and Part Six of this textbook have identified as essential.

Coda to Part Six: The Epistemological Crisis of the Digital Age and the Continuing Necessity of Science Journalism

The digital transformation of the information environment that Part Six has examined in detail is, as the Prolegomena warned, simultaneously a crisis and a generative disruption. The crisis is real and severe: the collapse of the gatekeeping order, the rise of algorithmic mediation, and the emergence of synthetic reality have created conditions in which false information can spread further, faster, and more convincingly than at any previous point in history, and in which the mechanisms of epistemic accountability that science journalism is designed to provide are under systematic commercial, political, and technological pressure. The fact that 30 percent more misinformation was documented in Bangladesh in 2025 than in 2024, that AI-generated content is now a significant fraction of the misinformation circulating in the country's information

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environment, and that the legal framework designed to protect journalism has until recently been weaponized primarily against it, are all indicators of a crisis that demands serious response.

But the generative dimension is also real. The digital environment has created new possibilities for science communication that are genuinely exciting: the possibility of reaching previously unreachable audiences through mobile-first digital content; the possibility of using interactive data visualization to make complex scientific information genuinely accessible; the possibility of participatory journalism that includes the knowledge of affected communities as well as the knowledge of institutional science; the possibility of international collaboration on scientific investigation that crosses the borders of national media environments; and the possibility, not yet fully realized in Bangladesh but developing rapidly, of a fact-checking ecosystem capable of holding scientific authority accountable in ways that the prestige press never could.

The science journalist who understands both the crisis and the generative disruption, who can navigate the algorithmic environment without being captured by it, who can use digital tools for verification and communication while protecting herself and her sources from digital threats, who can distinguish genuine scientific uncertainty from manufactured doubt in an environment awash with both, and who can maintain the commitment to accuracy and democratic accountability that is the justification for journalism's existence in a context that systematically rewards the opposite, is exactly the journalist that Bangladesh needs and that this textbook is designed, imperfectly and provisionally, to help form.

The synthesis of Part Six's analysis with the feminist epistemological framework of Part Five, and with the historical and philosophical foundations of Parts One through Four, yields a complex and demanding vision of what digital science journalism in Bangladesh must be: reflexively situated in its own position and interests; technically literate about the AI and platform environments in which it operates; legally informed about the framework of both threats and protections that the law provides; epistemologically humble about the limits of its own knowledge; and stubbornly committed to the democratic function of providing the most accurate, most complete, and most publicly accountable science communication that the conditions of the time allow. This vision is the one that the remaining parts of this textbook will continue to develop, complicate, and pursue.

Chapter Notes and Further Reading for Part Six

On the theory of the digital public sphere, Jurgen Habermas's "The Structural Transformation of the Public Sphere" (1962, translated 1989) is the essential starting point. Nancy Fraser's "Rethinking the Public Sphere" (1990) provides the essential feminist critique. Yochai Benkler's "The Wealth of Networks" (2006) represents the optimistic view that the digital transformation would democratize public communication. Eli Pariser's "The Filter Bubble" (2011) represents the critique of this optimism. Shoshana Zuboff's "The Age of Surveillance Capitalism" (2019) provides the most comprehensive critical analysis of the platform economy and its consequences for democratic governance.

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On platform theory, Nick Srnicek's "Platform Capitalism" (2017) provides an accessible introduction to the political economy of platforms. Tarleton Gillespie's "Custodians of the Internet" (2018) analyzes the specific dynamics of content moderation and platform responsibility. José van Dijck, Thomas Poell, and Martijn de Waal's "The Platform Society" (2018) provides a comprehensive sociological analysis of the platform as a social institution.

On AI and journalism, "The Handbook of Artificial Intelligence and Journalism," published in 2025 by Wiley and edited by Sarısakaloğlu and Löffelholz, is the most comprehensive current reference. The systematic review of AI in journalism from 2010 to 2025 published in 2025, authored by multiple researchers and available through arXiv, provides quantitative mapping of the field. The work of Von Sikorski and Hameleers on "Disinformation in the Age of Artificial Intelligence," published in Journalism and Mass Communication Quarterly in 2025, is the most directly relevant to the journalism practice dimension.

On misinformation in Bangladesh specifically, the annual reports of Dismislab, including the January 2026 report on 2025 misinformation, are primary sources. The Global Voices analysis of AI-generated content during the Bangladesh 2026 election, published in April 2026, is the most current and most comprehensive analysis of AI-driven political manipulation in the country. The Business Standard's January 2026 investigation into AI-generated content ahead of the election provides detailed empirical documentation. The Digitally Right research on Bangladesh's misinformation threat ahead of the 2026 polls, presented in early 2026, is the most systematic policy-relevant analysis of the fact-checking capacity gap.

On the legal framework, the Clooney Foundation for Justice and Centre for Governance Studies joint report of November 2025 on the Digital Security Act and lessons for press freedom is essential reading. The critical analysis of the Cyber Security Ordinance 2025 published in the Lawyers Club Bangladesh in May 2025 provides a detailed legal assessment. The Human Rights Watch joint statement on emerging digital laws in Bangladesh, published in February 2025, documents international civil society concerns about the Cyber Protection Ordinance and Personal Data Protection Ordinance. Article 19's December 2025 analysis of the Telecommunication Ordinance Amendment provides the most current assessment of evolving digital speech regulation.

On the psychology of misinformation and fact-checking, Dan Kahan's work on cultural cognition, collected at the Cultural Cognition Project website at Yale Law School, is essential. Ziva Kunda's foundational paper "The Case for Motivated Reasoning" (1990) in Psychological Bulletin established the empirical foundations of the field. Cass Sunstein's work on echo chambers, particularly "Going to Extremes" (2009), provides the political science dimensions. The research on AI-assisted fact-checking, including Shin and Hameleers' "Countering algorithmic bias and disinformation and effectively harnessing the power of AI in media," published in Journalism and Mass Communication Quarterly in 2022, provides the media studies dimension.

On digital safety for journalists, the practical guides published by the Committee to Protect Journalists, the Electronic Frontier Foundation, and the Digital Defenders Partnership are the

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most directly useful for Bangladeshi practitioners. The intersection of digital safety and press freedom in Bangladesh is addressed in the reports of the Bangladesh Center for Worker Solidarity and the Digitally Right research organization, which provide the most Bangladesh-specific analysis available.

For the developing theoretical literature on "infodemic" and its management, the WHO's framework documents are the primary institutional reference, while Kate Starbird's research at the University of Washington provides the most nuanced academic critique of the infodemic concept and its implications for information governance.

This concludes Part Six of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge." Part Seven will examine international scientific collaboration and the position of Bangladesh in the global science journalism ecosystem, including the political economy of global science, the specific opportunities and challenges of covering international research collaborations involving Bangladeshi scientists, the role of international journalism fellowships and training programs in shaping Bangladeshi science journalism, and the complex question of how Bangladesh's science journalists can build genuine international professional connections while maintaining the epistemic and political independence that their democratic function requires.

PART SEVEN: BANGLADESH IN THE GLOBAL SCIENCE JOURNALISM ECOSYSTEM -- COLLABORATION, DEPENDENCY, AND THE POLITICS OF INTERNATIONAL KNOWLEDGE

Prolegomena to Part Seven: The Global and the Local as False Dichotomy

There is a tempting way to organize a discussion of Bangladesh's relationship to global science journalism that this textbook must resist from the outset, because the temptation is itself ideologically loaded and analytically misleading. The temptation is to treat the global and the local as two distinct and separable spheres: global science as the domain of universal, rigorous, peer-reviewed knowledge produced in well-funded laboratories and published in prestigious international journals, and local science communication as the humble, underfunded, and perpetually aspiring effort to bring that universal knowledge to parochial audiences who would not otherwise have access to it. In this framing, Bangladesh is always the recipient and never the producer, always the student and never the teacher, always the beneficiary of international generosity and never the subject of its own scientific authority.

This framing is not merely condescending. It is factually wrong, theoretically incoherent, and politically dangerous. It is factually wrong because Bangladeshi scientists, research institutions, and science communicators have made and continue to make genuine and sometimes world-leading contributions to scientific knowledge, particularly in fields that directly engage with the specific environmental, epidemiological, and agricultural conditions of the country. The discovery and documentation of arsenic contamination in Bangladesh's groundwater, which

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affected tens of millions of people and which constitutes one of the largest environmental health crises in human history, drew on the work of Bangladeshi scientists and field researchers whose expertise and knowledge of local conditions was irreplaceable. The development of oral rehydration therapy, which has saved millions of lives worldwide and which was pioneered in part through research conducted during cholera outbreaks in Bangladesh in the 1970s and 1980s, is one of the most consequential public health innovations of the twentieth century, and Bangladesh's contribution to it is a matter of historical record.

It is theoretically incoherent because the entire tradition of science and technology studies, from Donna Haraway's critique of the view from nowhere to Sheila Jasanoff's comparative analysis of civic epistemologies, has demonstrated that there is no such thing as purely universal, context-free scientific knowledge. All knowledge is produced somewhere, by someone, under specific material and institutional conditions, with specific audiences and purposes in mind. The question is not whether scientific knowledge is situated but whose situatedness is acknowledged and whose is invisible. The pretense of universality is itself a form of power, and the Bangladeshi student of science journalism must be equipped to see through that pretense not in order to reject international science but in order to engage with it on genuinely critical and equitable terms.

It is politically dangerous because the framing of Bangladesh as perpetual recipient naturalizes the conditions of scientific underdevelopment and institutional dependency that are themselves the products of specific historical and political processes rather than inevitable features of Bangladesh's condition. These processes include the colonial organization of scientific research that systematically extracted knowledge from colonized territories while denying those territories the institutional capacity to produce it independently, the post-colonial continuation of this pattern through the architecture of international development assistance and conditional research funding, and the contemporary global intellectual property regime that commodifies scientific knowledge in ways that systematically disadvantage countries with limited capacity to participate in the knowledge economy.

Part Seven of this textbook examines Bangladesh's position in the global science journalism ecosystem with the critical awareness that the global itself is not a neutral category but a contested terrain. It asks what the political economy of global science production means for science journalists working in Bangladesh, how the specific patterns of international scientific collaboration involving Bangladeshi researchers create both opportunities and dependencies for science journalism practice, what the hidden curricula of international journalism fellowships and training programs transmit alongside their ostensible technical content, how the ethics of source use in an environment where international scientific authority is disproportionate creates specific challenges of epistemic justice, and what genuine international professional connection looks like when it is built on terms of equality rather than charity.

The answers to these questions require the student to move across multiple disciplines, from the sociology of science to international relations theory, from the political economy of media to the philosophy of knowledge, from legal analysis of intellectual property to the practical craft of investigative reporting on international research collaborations. This movement is not a departure from journalism but an expression of what journalism at its most serious requires: the willingness

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to follow a story wherever it goes, even when it goes into territory that is unfamiliar, uncomfortable, or inconvenient for existing institutions.

Chapter Fifty-Seven: The Political Economy of Global Science and Its Consequences for Bangladeshi Science Journalism

57.1 How Global Science Is Organized: A Critical Introduction

The global organization of scientific knowledge production is neither natural nor inevitable. It is the product of specific historical decisions, institutional arrangements, commercial interests, and geopolitical configurations that have produced a world in which scientific capacity is grotesquely unequally distributed and in which the ability to produce, validate, and communicate scientific knowledge is concentrated in a small number of wealthy countries and their associated institutions. Understanding this organization is not an optional supplement to the science journalist's education in Bangladesh: it is a prerequisite for understanding the material conditions within which Bangladeshi science journalism operates, the sources of the structural disadvantages it faces, and the possibilities for challenging and transforming those disadvantages.

The fundamental architecture of contemporary global science rests on a set of interlocking institutions, each of which plays a specific role in the production, validation, and dissemination of scientific knowledge. The research university, particularly the research university in the United States, the United Kingdom, Germany, France, and a small number of other wealthy countries, is the primary site of scientific knowledge production, housing the laboratories, the graduate training programs, and the scientific communities that generate most of the world's peer-reviewed research. The peer-reviewed journal, particularly the journals published by a small number of large commercial publishing houses, is the primary mechanism of scientific validation and dissemination, setting the standards by which scientific claims are evaluated, controlling access to the scientific literature through subscription paywalls, and assigning the prestige rankings that determine which research receives attention and which does not. The research funding agency, particularly the National Science Foundation and National Institutes of Health in the United States, the research councils in the United Kingdom, and the European Research Council in the European Union, is the primary mechanism through which public money is channeled into scientific research, setting the priorities that shape what questions scientists pursue and under what conditions.

Each of these institutions is organized in ways that systematically advantage scientists and scientific institutions in wealthy countries over those in poor countries. The research university in a wealthy country has access to better equipment, larger libraries, more stable funding, better-paid and more securely employed staff, and more extensive international networks than its counterpart in Bangladesh. The peer-reviewed journal system, despite the significant disruption introduced by the open access movement, continues to charge subscription prices that many Bangladeshi research libraries cannot afford and to impose article processing charges for open

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access publication that many Bangladeshi researchers cannot pay. The research funding agency in a wealthy country is not primarily focused on scientific questions that are of greatest relevance to the lives and needs of people in Bangladesh, and when it funds international research collaborations, the terms of those collaborations typically reflect the priorities and interests of the wealthy country funder rather than the Bangladeshi partner.

The consequences of this organization for science journalism in Bangladesh are multiple and serious. At the most basic level, the concentration of scientific knowledge production in wealthy countries means that the primary sources of scientific information available to Bangladeshi science journalists are produced elsewhere, for audiences elsewhere, and from perspectives that may not reflect the specific conditions, priorities, and values of Bangladesh. The systematic review published in the Journal of Science Communication by An Nguyen and Minh Tran in 2019, drawing on a comprehensive analysis of the literature from 2000 to 2017, documented that science journalism in developing countries shows heavy dependence on foreign sources, particularly the media of the Global North, low status of domestic science news in newsrooms, uncritical science reporting that easily lends itself to influences of non-science vested interests, a tight grip of politics on science journalism, and ineffective relationships between science and journalism. These characteristics, which the study identifies as consistently present across a wide range of developing country contexts, are not coincidental: they are direct consequences of the political economy of global science that this chapter is examining.

57.2 The Publishing Industry and the Paywalled Knowledge Problem

One of the most practically consequential dimensions of the global political economy of science for Bangladeshi science journalists is the commercial structure of the peer-reviewed publishing industry. The scientific publishing industry is organized around a business model that has been described by critics as one of the most remarkable commercial arrangements in human history: academics employed by universities (usually at public expense) conduct research, write it up, and submit it to journals; other academics (again usually at public expense) review those submissions without payment; the journal then sells the published results back to universities at prices that have consistently risen far faster than inflation, while denying the authors themselves the right to freely share their own work.

The major commercial publishers including Elsevier, Springer Nature, Wiley, Taylor and Francis, and Sage currently extract profit margins of approximately 30 to 40 percent from the scientific publishing enterprise, making scientific publishing one of the most profitable industries in the world. These profits are generated primarily by selling access to content created by researchers who are themselves publicly funded. The absurdity of this arrangement has been increasingly recognized within the scientific community, giving rise to significant reform movements including the open access movement, Plan S, and various national and institutional open access mandates.

For Bangladeshi science journalists, the paywalled knowledge problem takes a specific and highly consequential form. A journalist in Dhaka who wants to read the primary scientific literature on a topic she is investigating faces access barriers that her counterpart in London or

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Cambridge does not face. Bangladesh's research libraries, with some exceptions including those at the major public universities and research institutes that have been able to obtain limited access through programs like Research4Life, generally cannot afford the subscription prices charged by the major commercial publishers. The Bangladeshi journalist who is not affiliated with a subscribing institution typically cannot access current peer-reviewed science in her areas of coverage without either paying per-article fees that are prohibitive on a Bangladeshi journalist's salary or relying on workarounds of varying legal status including ResearchGate, Sci-Hub, and direct approaches to authors.

This access problem is not trivial, and its consequences for the quality of science journalism are direct. The journalist who cannot read the primary literature must rely on secondary sources including press releases from the institutions that produced the research, summaries in science journalism outlets based in wealthy countries, or the word of the researchers themselves. Press releases are systematically designed to present research in the most favorable possible light and to omit methodological limitations, alternative interpretations, and conflicts of interest. Secondary summaries in wealthy-country science journalism outlets are written for wealthy-country audiences with wealthy-country concerns and often omit context that would be relevant for Bangladeshi audiences. And the word of researchers themselves, while indispensable, is not a substitute for independent access to the methodology and data that allow a journalist to evaluate the claims being made.

The open access movement, which has gained significant momentum in the period between 2020 and 2026, represents both a partial solution and a new set of problems for Bangladeshi science journalists. The proliferation of open access journals has made a substantial and growing body of scientific literature freely available online, and several major funders including the Wellcome Trust, the Gates Foundation, and many European national research councils now mandate open access publication as a condition of their funding. The transition to open access, if completed, would represent a significant democratization of access to scientific knowledge that would benefit Bangladeshi researchers and journalists alike.

However, the dominant commercial model of open access, which charges article processing fees (APCs) to authors or their institutions in exchange for making published work freely available, has introduced a new and arguably more insidious form of inequality. While readers in Bangladesh can now access open access articles for free, researchers in Bangladesh face APCs ranging from several hundred to several thousand dollars per article, which represent a substantial barrier to publishing in the most prestigious journals and which disadvantage Bangladeshi research institutions relative to their wealthy-country counterparts, who can afford to pay APCs through grants or institutional funds. The result is a two-tier system in which wealthy-country researchers publish in prestigious open access journals while Bangladeshi researchers are either confined to lower-tier journals or must rely on grant funding from wealthy-country funders to cover publication costs, reintroducing through the back door the dependency relationships that open access was supposed to eliminate.

The predatory publishing problem, which has been documented in detail by researchers including Jeffrey Beall and by Bangladesh-specific investigative journalism, creates additional

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complexity for Bangladeshi science journalists. Bangladesh has a significant number of academic authors who publish in predatory journals, which charge publication fees while providing only the appearance of peer review. The Bangladesh Journal of Pharmacology itself warned in 2025 of a fraudulent website that falsely claimed to represent it, illustrating the specific way in which predatory journal practices intersect with the reputational integrity of legitimate Bangladeshi scientific publishing. For the science journalist, the proliferation of predatory journals means that the presence of a peer-reviewed publication is no longer sufficient evidence of scientific quality: she must be able to evaluate the quality and integrity of the journal itself, a task that requires familiarity with the specific landscape of predatory publication and that adds another layer of critical scrutiny to the already demanding work of science reporting in Bangladesh.

57.3 Research Priorities, Funding Flows, and the Question of Whose Science Gets Done

A question that lies at the heart of the political economy of global science and that is directly relevant to science journalism practice in Bangladesh is the question of whose scientific questions get asked and whose do not. The global organization of research funding means that the scientific questions that attract the most resources are typically those identified as priorities by funding agencies in wealthy countries, and those priorities are shaped by the health, economic, and environmental concerns of wealthy-country populations, by the commercial interests of wealthy-country industries, and by the geopolitical interests of wealthy-country governments.

The phenomenon of the 10/90 gap in health research, which refers to the fact that only ten percent of global health research resources were historically spent on diseases and conditions that account for ninety percent of the global burden of disease, is the most cited illustration of this distortion, and while targeted funding initiatives from institutions like the Gates Foundation and the Wellcome Trust have partially addressed this gap in specific disease areas, the broader structural pattern remains. The diseases and health conditions that disproportionately affect poor populations in countries like Bangladesh continue to receive less research funding, attract less scientific talent, generate less publishable research, and receive less coverage in international science media than conditions that primarily affect wealthy populations.

For Bangladesh specifically, this research priority distortion has direct consequences for science journalism. The journalist who covers public health in Bangladesh operates in an environment where some of the most important health threats facing the population are understudied, underreported in the international scientific literature, and therefore difficult to cover with the depth and rigor that the transmission and dialogue models of science journalism would require. Diseases like dengue, which kills significant numbers of Bangladeshis annually and which has been spreading in part as a consequence of climate change and urbanization, are covered by international science journalism primarily when they affect travelers from wealthy countries or when they produce outbreak events dramatic enough to attract global attention. The routine epidemiological burden of dengue in Bangladesh, and the scientific research on dengue prevention and treatment conducted by Bangladeshi researchers, receives far less international

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attention and therefore far less of the indirect validation and amplification that international coverage provides.

The climate science funding landscape presents a partial counter-example that is worth examining in detail because it illustrates both the possibilities and the limitations of international funding in addressing the research priority gap. Bangladesh is one of the countries most severely affected by climate change and has been recognized as such by the international scientific community since at least the 1990s. This recognition has translated into a substantial flow of international research funding into climate-related research in Bangladesh, generating a significant body of scientific literature on topics including sea level rise and coastal flooding, cyclone frequency and intensity, the impacts of salinity intrusion on agriculture, the consequences of glacial melt in the Himalayas for river flows in Bangladesh, and the adaptation strategies being developed by communities facing the most severe climate impacts.

This international investment in climate research in Bangladesh has created genuinely valuable scientific knowledge that has benefited both Bangladeshi and international understanding of climate vulnerability and adaptation. It has also created a community of Bangladeshi climate scientists with international connections and access to international research networks that their counterparts in other fields often lack. And it has provided Bangladeshi science journalists covering climate with access to a relatively rich body of primary scientific literature and a relatively large community of scientifically credible and willing sources.

But the climate research funding landscape also illustrates the dependencies and distortions that international funding can introduce. The research questions that attract funding are those defined as priorities by the funders, which tend to be questions about global climate systems and their large-scale consequences rather than questions about the specific local adaptations, community-level responses, and institutional innovations that are of most immediate practical relevance to the Bangladeshi communities most affected by climate change. The research partnerships through which international funding flows tend to be partnerships in which the wealthy-country partner holds the intellectual leadership of the project and the Bangladeshi partner contributes local knowledge and access while having limited control over the research agenda, the methodological choices, or the publication outcomes. And the international visibility that climate science in Bangladesh receives, while it creates some amplification for Bangladeshi perspectives and voices, also creates an incentive for Bangladeshi scientists and institutions to orient their research toward the concerns of international funders and audiences rather than the concerns of the communities they live and work among.

57.4 The Geopolitics of Science and Bangladesh's Changing Positioning

The political economy of global science cannot be understood without understanding the geopolitical context within which science is produced and funded. Science is not apolitical. The major national scientific programs of the world's powers are deeply embedded in their national strategic interests, and the international scientific collaborations that cross national borders are never purely about the disinterested pursuit of knowledge: they are also about geopolitical influence, technological competition, and the projection of soft power.

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Bangladesh's position in the geopolitics of science has been significantly affected by the country's changing political landscape and international alignments, particularly in the period from 2024 to 2026. The fall of the Sheikh Hasina government in August 2024 and the subsequent reorientation of Bangladesh's foreign policy created significant shifts in the country's scientific and academic relationships with its major partners. Bangladesh's relationship with India, which had been close under the Hasina government and which had provided significant scientific and academic collaboration through institutions like the Indian Council for Cultural Relations and various bilateral research programs, deteriorated substantially following the political transition. Relations with China, which the Diplomat reported as Bangladesh's more stable and reliable partner in the post-transition period, expanded, with implications for the direction and character of scientific collaboration. The role of the United States and its allied institutions including the Gates Foundation, USAID, and various university research programs, which had maintained a significant presence in Bangladesh through health, agricultural, and environmental research, became more complex in the context of American political volatility and the disruption of existing aid and research funding flows.

For the Bangladeshi science journalist, these geopolitical shifts create specific reporting challenges and opportunities. The shifts mean that the landscape of international scientific collaboration is more volatile and uncertain than it was in the recent past, that the sources of research funding are changing in ways that may create new dependencies and dissolve existing ones, and that the political context within which international research partnerships are embedded requires more careful scrutiny than it might have required in a more stable geopolitical environment. They also create genuine reporting opportunities, because the changing alignment of international science funding and collaboration in Bangladesh is itself a significant story about the political economy of knowledge that deserves careful investigation.

The specific question of China's expanding scientific presence in Bangladesh is one that deserves extended discussion, because it illustrates in concentrated form many of the broader themes of this chapter. China has invested heavily in expanding its scientific and academic relationships with developing countries as part of its broader Belt and Road Initiative and its parallel efforts to build international scientific influence. In Bangladesh, this investment has included funding for joint research programs in areas including agricultural biotechnology, infrastructure engineering, and environmental science, support for Bangladeshi students to pursue graduate training in Chinese universities, and the establishment of Confucius Institutes and other cultural and educational programs at Bangladeshi universities. The Chinese Academy of Sciences and various Chinese universities have established formal collaboration agreements with Bangladeshi research institutions, and Bangladeshi researchers increasingly appear as co-authors on publications in Chinese scientific journals and in international journals with Chinese lead authors.

The question of how Bangladeshi science journalists should cover this expanding Chinese scientific presence is genuinely difficult and genuinely important. On one hand, the expansion of scientific collaboration with China provides Bangladeshi researchers with access to resources, training, and international networks that they might not otherwise have, and the research produced through these collaborations has in some cases real scientific merit and practical value. On the other hand, the political conditions attached to Chinese scientific engagement, the

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questions about research integrity and academic freedom in Chinese universities, the concerns about data sharing and intellectual property that have been raised in the context of Chinese scientific collaborations internationally, and the geopolitical context within which Chinese scientific soft power is being deployed all create legitimate grounds for critical scrutiny that the Bangladeshi science journalist should be equipped to apply.

The same critical scrutiny applies to the scientific engagement of all of Bangladesh's international partners, including the United States, the European Union, and India. The science journalist who subjects Chinese-funded research to critical scrutiny while uncritically accepting American or European-funded research is not practicing genuine scientific journalism: she is practicing geopolitical journalism dressed up as science reporting. The principle of equivalent scrutiny, which requires that the same questions about funding sources, conflicts of interest, methodological quality, and political context be applied to all international research collaborations regardless of the national affiliation of the funders, is both an ethical requirement and a professional standard that this textbook advocates firmly.

Chapter Fifty-Eight: Bangladeshi Scientists in the Global Research Economy

58.1 The Diaspora Dimension: Bangladeshi Scientists Abroad and Their Complex Relationship to Home

Any honest account of Bangladesh's relationship to the global science ecosystem must begin with a fact that is sometimes obscured in discussions of scientific capacity in developing countries: a substantial proportion of the world's Bangladeshi-origin scientists work in wealthy countries, primarily in the United States, the United Kingdom, Canada, and Australia, and their presence in those countries' research universities, government laboratories, and private sector research facilities represents a significant reservoir of scientific talent and expertise that is simultaneously a resource for Bangladesh and a symptom of the structural conditions that make Bangladesh's domestic scientific capacity inadequate for its needs.

The scientific diaspora is a complex phenomenon that resists simple narratives of either loss or gain. The narrative of brain drain, which emphasizes the loss to Bangladesh of talented scientists who might have built domestic research capacity had they remained in the country, is genuine and important. Bangladesh has invested public resources in the education and early training of scientists who then take their skills and their productive years to wealthy countries that can offer better salaries, better equipment, more stable employment, and more international recognition. This represents a direct subsidy of wealthy-country scientific capacity by a poor country and is one of the mechanisms through which global scientific inequality is reproduced.

The narrative of brain gain, which emphasizes the contributions that diaspora scientists make to Bangladesh through remittances, return visits, collaborative research, and the transfer of skills, knowledge, and networks, is also genuine and important. Bangladeshi scientists in American research universities have collaborated with colleagues in Dhaka on research projects that could

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not have been conducted without the combination of international networks and local knowledge that diaspora collaboration enables. Bangladeshi medical researchers at Harvard, MIT, Johns Hopkins, and other American institutions have maintained research relationships with ICDDR,B (the International Centre for Diarrhoeal Disease Research, Bangladesh) and with Bangladeshi universities that have produced important research on the specific health challenges facing the Bangladeshi population. Bangladeshi engineers in Silicon Valley and at American defense and technology companies have participated in diaspora networks that have provided both financial resources and technological knowledge to Bangladesh's developing technology sector.

For the Bangladeshi science journalist, the diaspora dimension creates specific reporting opportunities and challenges. The diaspora scientist is often a valuable source of scientific expertise and international perspective that is not available domestically, and the diaspora scientist who has maintained connections to Bangladesh often has both the scientific knowledge and the local contextual understanding to serve as an ideal interpreter of international research for Bangladeshi audiences. But the diaspora scientist also has interests and positions that may not align straightforwardly with the public interest in Bangladesh. The diaspora scientist who has built a successful career in a wealthy country has institutional affiliations, professional loyalties, funding relationships, and reputational interests that may influence her public statements about scientific issues affecting Bangladesh, and the journalist who treats diaspora scientific authority as unproblematically representative of Bangladeshi scientific interests is missing an important dimension of the story.

The specific ethical challenge of covering the scientific diaspora is the challenge of distinguishing between the diaspora scientist as source of independent expertise and the diaspora scientist as stakeholder in a set of institutional arrangements that may not align with the interests of the Bangladeshi public. This distinction is not always easy to make, and it does not mean that diaspora scientists are less reliable or less valuable as sources than domestically based scientists. It means that the same questions about institutional position, funding relationships, and potential conflicts of interest that the science journalist applies to any source must be applied to diaspora sources as well, with awareness of the specific ways in which their institutional positions may shape their perspectives.

58.2 Research Collaboration Patterns: BCSIR, ICDDR,B, and the Architecture of Partnership

The institutional landscape of international scientific collaboration in Bangladesh is organized around a set of research institutions that have developed specific patterns of international partnership that the Bangladeshi science journalist must understand. The Bangladesh Council of Scientific and Industrial Research (BCSIR), which is the primary government research institution with a mandate across multiple scientific fields, has maintained international collaborations with Saudi Arabia, the United States, and China, showing what one analysis of its 2025 Web of Science indexed publications described as growing global connectivity while also revealing the specific geographic and thematic patterns through which this connectivity operates. The BCSIR's research output, indexed in the Web of Science, provides a publicly available record of its

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collaborative relationships that the science journalist can use as a starting point for investigating the character of those relationships.

The International Centre for Diarrhoeal Disease Research, Bangladesh, known as ICDDR,B, represents a different model of international scientific collaboration: an internationally funded research institution based in Bangladesh that has operated since 1960 with a primary mandate of conducting research on diarrhoeal and other diseases of global health significance, particularly as they affect populations in Bangladesh and similar settings. ICDDR,B has historically been funded by a consortium of international donors including the governments of the United States, the United Kingdom, Australia, and various European countries, as well as foundations and multilateral organizations, and it has maintained research partnerships with scientific institutions around the world. Its scientific output has been substantial and has included research of genuine global importance, including contributions to the development of oral rehydration therapy that have saved millions of lives.

ICDDR,B represents both a model of what international scientific collaboration can achieve when it is genuinely oriented toward the health needs of a developing country population and a case study in the complexities and tensions that such collaboration inevitably produces. The institution is simultaneously a Bangladeshi institution, physically located in Dhaka and employing large numbers of Bangladeshi staff and scientists, and an international institution, funded primarily by foreign governments and foundations, governed by an international board, and producing research that is primarily published in international journals for international audiences. This dual identity creates tensions around questions of scientific priority, data ownership, intellectual property, the terms on which Bangladeshi researchers participate in and receive credit for collaborative work, and the relationship between the institution's research agenda and the health policy priorities of the Bangladeshi state.

These tensions are not merely academic. The question of whether an international research institution based in Bangladesh is primarily accountable to its international funders or to the Bangladeshi population whose lives its research most directly affects is a genuine question of democratic accountability that deserves serious journalistic investigation. The science journalist who covers ICDDR,B and similar institutions needs to ask not just what research the institution is producing but whose priorities are shaping the research agenda, whose interests are served by the specific methodological choices and publication outcomes of the institution's work, and what mechanisms of accountability to the Bangladeshi public exist and whether they are functioning effectively.

58.3 The Problem of Research Ethics in International Collaboration: Investigative Imperatives

The ethics of international research collaboration present specific investigative challenges for Bangladeshi science journalists, because the research ethics frameworks that govern international collaborations are complex, multi-jurisdictional, and not always transparent to journalists or to the public whose participation in research the frameworks are designed to protect.

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The fundamental ethical requirement of human subjects research, internationally codified through the Declaration of Helsinki and its subsequent revisions, is that research involving human participants must receive the prior approval of an ethics review board with appropriate independence and expertise, must obtain the genuinely informed consent of participants, and must not expose participants to risks that are disproportionate to the potential benefits of the research. These requirements apply to international collaborative research in Bangladesh just as they apply to research conducted in wealthy countries, and Bangladesh has a system of Institutional Review Boards (IRBs) at its major research institutions that are formally responsible for evaluating the ethical acceptability of research protocols.

In practice, the ethics review system for international collaborative research in Bangladesh faces a number of structural challenges that create genuine risks of ethical failure. The capacity of IRBs at many Bangladeshi institutions is limited by inadequate resources, insufficient training, and excessive workloads, creating conditions in which ethics review may be inadequate to the task of genuinely evaluating complex international research protocols. The power asymmetries between international and local partners in collaborative research, which typically give the international partner control over the research design and the local partner the role of implementing the research design, create conditions in which local ethics reviewers may be under pressure, explicit or implicit, to approve protocols designed elsewhere. And the consent process itself, which depends on the genuine ability of potential research participants to understand what they are being asked to consent to, faces specific challenges in Bangladesh related to literacy, language, and the cultural and social dynamics that shape the relationship between research staff and potential participants.

The history of unethical research practices in developing countries, including the infamous Tuskegee syphilis study in the United States and a series of clinical trials in developing countries that exploited regulatory gaps and power asymmetries to conduct research that would not have been permitted in wealthy countries, provides the historical context within which the science journalist covering research ethics in Bangladesh must situate her work. The 1994-1997 trials of short-course AZT for the prevention of mother-to-child transmission of HIV, which were conducted in developing countries including some with significant populations, and which used placebo controls that would not have been ethically permissible in the wealthy countries where effective treatments were available, generated extensive debate about the ethics of differential standards in research conducted in developing countries and gave rise to significant revisions to the Declaration of Helsinki.

For Bangladesh specifically, the investigative record on research ethics violations in international collaborative research is incomplete, partly because many potential violations are never investigated and partly because the mechanisms for reporting and investigating research ethics concerns are inadequate. The science journalist who investigates research ethics in Bangladesh faces the challenge of reporting on a system whose failures are often invisible, whose victims are often among the most vulnerable members of Bangladeshi society, and whose perpetrators often include internationally respected research institutions with significant institutional prestige that they can deploy in response to critical scrutiny.

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The investigative tools available for this reporting include the public records of IRB approvals, which in Bangladesh are not always fully public but can be pursued through right to information requests, the published research literature, which provides information about study designs and consent processes that can be evaluated against ethical standards, the clinical trials registration systems including the International Standard Randomised Controlled Trial Number registry and ClinicalTrials.gov, where international research protocols are required to be registered before participant enrollment begins, and the testimony of research participants and research staff who have direct knowledge of the conditions under which research is conducted. Each of these tools has limitations, and the use of all of them requires the combination of scientific literacy, investigative persistence, and source protection skills that this textbook has argued throughout must be central to the science journalist's professional formation.

Chapter Fifty-Nine: Covering International Research Collaborations -- Protocols, Problems, and the Art of the Cross-Border Investigation

59.1 What International Research Collaborations Look Like from the Inside

The science journalist who wants to cover an international research collaboration involving Bangladeshi scientists must first understand what such a collaboration actually looks like from the inside, because the official descriptions of collaborations in grant applications, press releases, and institutional websites rarely capture the actual dynamics of how research partnerships function, where power resides within them, how conflicts are managed, and how the outputs of the collaboration are distributed among partners.

The formal structure of a typical international research collaboration involving a Bangladeshi partner might include a grant awarded by a foreign funding agency to a lead institution in a wealthy country, with sub-grants to partner institutions including a Bangladeshi partner. The formal governance structure might include a principal investigator at the lead institution, co-principal investigators at partner institutions, a steering committee, and a set of formal reporting requirements. The intellectual property arrangements for the collaboration might specify that all data and findings are jointly owned by the participating institutions, or that intellectual property rights are held by the lead institution, or that they are subject to the specific policies of the funding agency, which may include requirements that findings be made available to the public through open access publication or through data sharing.

The actual dynamics of such a collaboration often look quite different from this formal structure. The principal investigator at the lead institution typically sets the intellectual direction of the research, controls the overall budget, makes the key methodological decisions, and controls access to the data that the collaboration produces. The Bangladeshi co-principal investigator typically contributes local knowledge, manages the fieldwork team, navigates the local bureaucratic and ethical approval processes, and ensures that the research can actually be conducted in the specific conditions of Bangladesh. The power differential between these roles is

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real and consequential, even when it is not formally acknowledged and even when the official language of the collaboration emphasizes partnership and mutual benefit.

Data ownership and data sharing are specific and practically consequential dimensions of this power differential. In many international research collaborations involving Bangladeshi partners, the data produced by the collaboration, including clinical data, environmental measurements, or social survey data collected in Bangladesh, is managed by the lead institution in the wealthy country. This means that the Bangladeshi partner institution may not have independent access to the full dataset produced by a research project conducted in Bangladesh, by Bangladeshi research staff, with Bangladeshi participants. The science journalist covering such a collaboration should ask who has access to the data, under what conditions, and what would happen if the Bangladeshi partner wanted to conduct additional analyses not contemplated in the original research design.

The question of attribution and credit in international collaborative publications is similarly consequential. The international scientific publication system assigns credit through authorship, and the conventions governing authorship in different scientific fields vary in ways that create systematic risks of under-attribution to researchers who do significant work but lack the institutional position to assert their contributions. In many international collaborative publications involving Bangladeshi researchers, the senior authorship positions, which carry the most professional prestige and which shape the career trajectories of the scientists involved, go to researchers at the lead institution, while Bangladeshi researchers appear as middle authors in the long lists that characterize collaborative papers, where their specific contributions may be invisible to readers. The journalist who reads a published paper and attributes the research to the institution where the first or last author is employed is engaged in a form of credit allocation that systematically misrepresents the actual geography of the research.

59.2 Investigative Methods for Cross-Border Science Journalism

The investigation of international research collaborations requires the adaptation of investigative journalism methods to a cross-border context that creates specific logistical, legal, and ethical challenges. The journalist investigating an international research collaboration may need to obtain documents from institutions in multiple jurisdictions with different freedom of information laws, interview sources who are located in different countries and who face different legal and professional risks from speaking to a journalist, and evaluate scientific claims that are embedded in the disciplinary conventions of multiple research fields.

The starting point for any investigation of an international research collaboration is the public record, which is more extensive than many journalists realize. For collaborations that involve clinical trials, the registration records in public databases like ClinicalTrials.gov and the WHO International Clinical Trials Registry Platform provide information about the research design, the participating institutions, and the funding sources before any results are published, and discrepancies between the pre-registered design and the published results are themselves a potentially significant story. For collaborations that are funded by US government agencies including the National Institutes of Health, the research reporting database Research Portfolio

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Online Reporting Tools (RePORTER) provides detailed information about grant awards including the amounts, the funding periods, the principal investigators, and the institutional affiliates. For collaborations that result in published research, the published papers themselves provide information about funding sources, author affiliations, and conflicts of interest, and any discrepancies between this information and other public records are worth investigating.

The use of right to information (RTI) requests or their international equivalents is a powerful investigative tool for investigations of international research collaborations, but it requires careful strategic thinking about what information is likely to be held by which institutions and whether the institutions in question are subject to freedom of information obligations. In Bangladesh, the RTI Act of 2009 applies to public bodies including government research institutions and public universities, and provides a legal basis for obtaining documents including grant agreements, IRB approvals, data sharing agreements, and correspondence relating to international research collaborations. However, the RTI Act has significant limitations in practice, including inadequate enforcement mechanisms and a culture of non-disclosure in many public institutions, and the journalist who uses it must be prepared for delays, denials, and partial disclosure.

Cross-border investigation introduces additional complexity when the institutions being investigated are in countries with different or more restrictive freedom of information regimes. The United States government's Freedom of Information Act, though imperfect and subject to significant delays and exemptions, provides a mechanism for obtaining documents from US federal agencies including the National Institutes of Health and USAID. The United Kingdom's Freedom of Information Act provides similar, if less comprehensive, access to UK government documents. Many private foundations including the Gates Foundation are not subject to freedom of information obligations at all, though they publish some information about their grant-making voluntarily, and systematic analysis of this voluntary disclosure can be informative.

The journalist investigating international scientific collaborations should also make use of the financial disclosure requirements imposed on researchers and institutions in many countries. In the United States, researchers who receive federal funding are required to disclose financial conflicts of interest, and these disclosures are in some cases publicly accessible. The published papers themselves contain conflict of interest statements that can be checked against other public records. The institutions that participate in international collaborations file tax returns and other financial reports that may contain information about their international financial relationships. Systematic analysis of these financial records, using the techniques of computer-assisted reporting, can reveal patterns of financial relationship between Bangladeshi institutions and international partners that are not visible from the official narratives of scientific collaboration.

59.3 Case Study Analysis: The Politics of Reporting on Climate Research in Bangladesh

Climate change is the area of international scientific collaboration in Bangladesh where the density of reporting and the intensity of political interest are both greatest, and it is therefore a useful case study for examining the specific challenges of covering international research collaborations. Bangladesh is regularly cited in international climate discourse as one of the

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countries most vulnerable to the effects of climate change, and this citation has generated a substantial flow of international scientific attention, research funding, and media coverage that has made Bangladesh a globally recognized case study of climate vulnerability.

This international visibility has been in many respects a genuine benefit for Bangladesh. It has brought research resources and scientific attention to the specific impacts of climate change on a country with limited resources to address those impacts. It has given Bangladeshi scientists and policymakers a platform in international climate negotiations and in the scientific community. And it has generated a body of scientific literature on Bangladesh's climate situation that is substantially larger and more detailed than it would be if Bangladesh were merely another developing country receiving standard development attention.

But the international visibility of Bangladesh's climate situation has also introduced distortions and dependencies that deserve critical journalistic scrutiny. The international narrative of Bangladesh as climate victim, while it captures something genuinely true about the country's extraordinary vulnerability to sea level rise, cyclonic flooding, and temperature extremes, also reduces a complex and internally differentiated country to a single dramatic story of impending catastrophe. This narrative serves specific interests: it supports the advocacy work of international environmental NGOs, it provides emotionally compelling content for international media, and it gives wealthy-country governments and international organizations a morally compelling case for climate finance. But it is not always the narrative that Bangladeshi communities and Bangladeshi scientists would choose for themselves, and the process by which the international climate narrative about Bangladesh is produced is not democratically transparent.

The specific dynamics of how international climate research in Bangladesh is framed and communicated illustrate a broader pattern in the political economy of global science in which developing countries serve as research sites whose conditions generate knowledge that is primarily interpreted and communicated by researchers and journalists in wealthy countries. A cyclone that hits the Bangladesh coast generates a flood of research by climate scientists at American and European universities, using the event to validate climate models and to illustrate the consequences of global warming for vulnerable populations. The specific experiences of the Bangladeshi communities affected by the cyclone, the specific institutional failures and social structures that determined who was most affected and least able to recover, and the specific scientific and policy knowledge held by Bangladeshi researchers familiar with the region may or may not appear in the international scientific and journalistic coverage of the event, depending on whether international researchers and journalists make the effort to incorporate Bangladeshi expertise and experience.

The science journalist covering climate in Bangladesh should be alert to this dynamic and should actively investigate not just the science but the process by which the science is produced, communicated, and interpreted. She should ask not just what the research says but whose research it is, who funded it, who collected the data, who analyzed it, who wrote it up, and who controls the narrative in which it is embedded. She should be attentive to the gap between the international scientific narrative about Bangladesh's climate situation and the narratives that

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emerge from Bangladeshi scientific institutions, Bangladeshi research communities, and the Bangladeshi communities most directly affected by climate change. And she should be willing to write the harder story, the story about the politics of climate science in Bangladesh rather than just the science itself, even when that story is more complex, more controversial, and less comfortable for the international institutions whose support is important to many Bangladeshi research programs.

Chapter Sixty: The Hidden Curricula of International Journalism Fellowships and Training Programs

60.1 What Fellowships Are and What They Do

International journalism fellowships and training programs have been a significant feature of the landscape of Bangladeshi journalism, including science journalism, since at least the 1990s, and they have become more numerous and more varied in the period since 2010 as global foundations, governments, and media organizations have invested increasing resources in journalism capacity-building in developing countries. For individual Bangladeshi journalists, fellowships from institutions including the Reuters Institute for the Study of Journalism at Oxford, the International Center for Journalists (ICFJ), the Knight Science Journalism Fellowship at MIT, the Nieman Fellowship at Harvard, the EJC's Journalism Science Alliance program, and various bilateral programs funded by governments including those of the United States, Germany, and the United Kingdom represent significant opportunities for professional development, international exposure, and the building of networks with journalists and institutions around the world.

For the field of Bangladeshi science journalism as a whole, the cumulative effect of two decades of international fellowship and training investment is substantial. A cohort of Bangladeshi journalists has received intensive exposure to international standards of science journalism practice, to the resources and methods of the world's leading science journalism programs, and to the professional networks of the global science journalism community. Some of these journalists have returned to Bangladesh with significantly expanded skills and perspectives that they have contributed to the improvement of science journalism standards in their newsrooms and professional organizations. Others have left Bangladesh permanently, contributing to the diaspora dimension of Bangladeshi journalism in much the same way that scientists from Bangladesh contribute to the scientific diaspora.

The formal content of international journalism fellowships typically includes training in the methods of science journalism, including how to read scientific papers, how to evaluate statistical claims, how to use data journalism tools, how to find and interview scientific sources, and how to translate complex scientific information for non-specialist audiences. It includes exposure to the practices and standards of science journalism in the wealthy countries where the fellowship programs are based, including the institutional relationships between journalists and scientific institutions, the editorial processes of prestigious science journalism outlets, and the

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professional norms that govern the relationship between science journalists and their sources. And it includes access to international professional networks, to databases and resources that may not be available in Bangladesh, and to the social capital that comes from being a recognized participant in the global science journalism community.

60.2 The Hidden Curriculum: What Fellowships Teach Without Teaching

But international journalism fellowships also transmit something that is not part of their formal curriculum and that is rarely discussed explicitly in their design or evaluation: a set of assumptions, values, professional norms, and ways of seeing the world that reflect the specific social, political, and institutional contexts of the wealthy countries where they are based and that may not translate straightforwardly to the context of journalism practice in Bangladesh. This is what educational theorists since Benson Snyder's 1971 study call the hidden curriculum: the values and assumptions that educational programs transmit through their structure, their relationships, and their taken-for-granted presuppositions rather than through their explicit content.

The hidden curriculum of international science journalism fellowships includes, among other things, a particular understanding of the relationship between journalists and scientific institutions that reflects the specific institutional arrangements of wealthy-country journalism. In the United States and the United Kingdom, where many of the most prestigious fellowship programs are based, science journalism operates within a framework in which scientific institutions are generally well-funded, professionally independent, and capable of sustained research programs that produce reliable outputs at predictable intervals. The relationship between science journalists and scientific sources in this context is typically characterized by a degree of institutional trust that is grounded in the actual track record of the institutions concerned, and the professional norm of critical but constructive engagement with scientific institutions reflects this trust.

This framework does not straightforwardly apply to the Bangladeshi context, where scientific institutions are under-funded, subject to political pressure, and have a track record that includes both genuine scientific achievement and significant institutional failure. The Bangladeshi science journalist who has internalized the professional norms of wealthy-country science journalism may find that those norms are inadequate guides to the specific challenges she faces, and may need to develop a more critical and more contextually grounded set of professional orientations. The fellowship that teaches critical engagement with scientific claims while leaving unchanged the assumption that scientific institutions are fundamentally trustworthy actors is teaching a lesson that requires significant modification for the Bangladeshi context.

The hidden curriculum of international fellowships also includes assumptions about the epistemological status of different kinds of knowledge. The science journalism training in wealthy countries typically emphasizes peer-reviewed publication as the gold standard of scientific knowledge, and the skill of evaluating peer-reviewed research is central to what these programs teach. But in Bangladesh, where peer-reviewed research on many of the most important scientific questions facing the population is sparse, where much of the relevant

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knowledge is held by practitioners, by affected communities, and by researchers who do not publish in international peer-reviewed journals, and where the peer review system itself, as the predatory journal problem illustrates, cannot always be trusted as a guarantee of quality, the epistemological framework of wealthy-country science journalism is inadequate and sometimes actively misleading.

The political assumptions embedded in international fellowship programs also deserve scrutiny. Many of these programs are funded by foundations and governments with specific geopolitical interests and ideological commitments, and the journalistic norms and values they transmit, including norms about press freedom, editorial independence, and the proper relationship between journalism and the state, reflect those interests and commitments. The Knight Science Journalism Fellowship at MIT, for instance, is funded by a foundation established by the Knight brothers, who built a media empire in the United States during the twentieth century, and whose vision of journalism reflects specific American assumptions about the role of the free press in a democratic society. These assumptions are not neutral: they reflect a specific history, a specific legal framework, and a specific set of institutional arrangements that are not simply transferable to Bangladesh.

This is not an argument against international journalism fellowships or against the genuine value that they can provide to individual Bangladeshi journalists and to the field of Bangladeshi science journalism. It is an argument for approaching international fellowship opportunities with the same critical awareness that this textbook has argued throughout should characterize the science journalist's approach to all sources of authority and expertise. The Bangladeshi journalist who participates in an international fellowship program should engage fully with what the program offers while also maintaining the critical distance necessary to evaluate what the program takes for granted, what it leaves out, and how its assumptions and values relate to the specific conditions of journalism practice in Bangladesh.

60.3 The Gender Dimension of International Fellowship Access

The access of Bangladeshi women science journalists to international fellowship and training opportunities is a specific dimension of the broader question of fellowship impact that deserves discussion in its own right. The evidence from the Coalition for Women in Journalism and from the broader literature on gendered patterns in journalism, discussed in detail in Part Five of this textbook, suggests that women journalists in Bangladesh face systematic barriers to the professional advancement and international networking that fellowships can facilitate, and that these barriers are not simply overcome by making fellowships formally open to women applicants.

The barriers include the practical obstacles to participation in extended fellowship programs that require international travel and extended absence from home, which disproportionately affect women with caregiving responsibilities in a context where those responsibilities remain predominantly feminized. They include the informal networking practices through which fellowship opportunities are identified and applications are encouraged, which tend to favor candidates who are already well-connected in professional networks that are themselves skewed

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toward men. They include the selection criteria of fellowship programs, which often emphasize prior publication, editorial seniority, and professional recognition in ways that systematically disadvantage women who have faced discrimination in the newsroom promotion structures. And they include the specific challenges that women journalists face in the international professional contexts that fellowships provide access to, including forms of gendered discrimination and harassment that may operate differently in international contexts than in the Bangladeshi contexts that women journalists have experience navigating.

The implications for fellowship program design are significant. Programs that are genuinely committed to supporting Bangladeshi women science journalists must do more than formally include women in their eligibility criteria: they must examine and address the structural barriers to women's participation, provide specific support for women with caregiving responsibilities, actively recruit women candidates through networks that reach beyond the existing male-dominated professional structures, and ensure that the international environments they provide access to are genuinely supportive and safe for women participants. The 2026 Journalism Science Alliance call's focus on cross-sectoral collaboration between media and research institutions offers one model for extending the reach of international fellowship-style support, though its geographic limitation to Creative Europe participating countries means that Bangladeshi journalists are not directly eligible for its core funding while potentially participating in international partnerships.

60.4 Building Institutional Capacity versus Individual Capacity: A Critical Tension

One of the most important structural critiques of international journalism fellowships and training programs is that they typically build individual capacity rather than institutional capacity, and that the development of individual journalistic excellence without corresponding development of the institutional contexts within which excellent journalism can be practiced is ultimately insufficient for the systemic change that Bangladeshi science journalism requires.

This critique is grounded in a simple observation: the Bangladeshi science journalist who returns from a prestigious international fellowship with significantly enhanced skills, wider networks, and deeper understanding of international science journalism standards faces the same institutional environment that she left, including the same editorial pressures to avoid stories that offend powerful advertisers or political patrons, the same resource constraints that make in-depth reporting on complex scientific questions practically difficult, the same legal threats from a legislative framework that has historically been weaponized against critical reporting, and the same professional culture that may not value or reward the kind of ambitious science journalism that the fellowship has equipped her to do.

The individual capacity built by international fellowships is genuinely valuable and genuinely matters. The fellowship alumna who brings her expanded skills and wider perspectives to her newsroom contributes to gradual cultural and professional change, even in an institutional environment that is resistant to that change. The networks she has built connect her newsroom, however indirectly, to international resources, stories, and professional standards. And her own example, as a Bangladeshi woman or man practicing high-quality science journalism, contributes

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to the visibility and legitimacy of the profession in ways that matter for its long-term development.

But individual capacity-building without institutional development is ultimately insufficient, and the international community of donors and support organizations that funds fellowship programs for Bangladeshi journalists should be challenged to think more seriously about how its resources can support the institutional transformation of Bangladeshi science journalism, including the development of editorial independence, the reform of the legal framework governing press freedom, the development of sustainable funding models for quality journalism, and the creation of professional organizations capable of setting and enforcing ethical standards for science reporting.

Chapter Sixty-One: The Ethics of International Sources and the Problem of Epistemic Justice

61.1 Epistemic Justice as a Framework for Science Journalism Practice

The concept of epistemic justice, developed by philosopher Miranda Fricker in her 2007 book of that title and subsequently applied in a range of contexts including science communication, provides a powerful framework for thinking about some of the most important ethical dimensions of international source use in science journalism. Fricker identifies two forms of epistemic injustice: testimonial injustice, which occurs when a speaker's credibility is deflated because of prejudice, and hermeneutical injustice, which occurs when a gap in collective interpretive resources puts someone at an unfair disadvantage in making sense of their social experience.

Applied to science journalism, epistemic justice analysis asks whether the credibility that a journalist assigns to different sources reflects the actual quality of those sources' knowledge and reasoning, or whether it reflects unjustified credibility differentials based on factors including the sources' institutional affiliation, national origin, language, gender, race, or educational credentials. The Bangladeshi science journalist who treats the expert opinion of a researcher at a prestigious American university as more authoritative than the expert opinion of an equally knowledgeable researcher at a Bangladeshi institution is potentially engaged in testimonial injustice if the differential treatment is based on institutional prestige and national origin rather than on genuine assessment of the quality of the knowledge each researcher brings to the question at hand.

This is not an abstract philosophical concern. The practical consequences of epistemic injustice in science journalism are real. When the voice of the international expert systematically overrides the voice of the local expert in science reporting on issues that directly affect local communities, the resulting journalism is not merely epistemically unjust: it is also democratically deficient, because it systematically elevates outside perspectives over the knowledge, values, and priorities of the people most directly affected by the issues being reported. And when

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communities whose knowledge and experience are relevant to scientific questions are treated as objects of scientific study rather than as subjects with legitimate knowledge claims, the journalism that results from this treatment fails both as science communication and as democratic accountability.

The hermeneutical dimension of epistemic justice analysis is equally relevant to Bangladeshi science journalism practice. The concepts and frameworks through which science journalism describes and explains scientific issues are not neutral: they reflect specific cultural and institutional assumptions that may not fit the specific conditions and experiences of the Bangladeshi communities most affected by those issues. The concepts used in climate science journalism, including terms like "adaptation," "resilience," and "vulnerability," have specific technical meanings within the international scientific literature that may not capture the ways in which Bangladeshi communities themselves understand and describe their situations. The hermeneutical challenge for the Bangladeshi science journalist is to develop conceptual resources that are adequate to the specific experiences and understandings of Bangladeshi communities, rather than simply importing the conceptual frameworks of international science journalism and imposing them on local realities.

61.2 The Source Ecosystem: Mapping and Challenging Dependence

The systematic dependence of science journalism in developing countries on international sources, identified by the 2019 systematic review of Nguyen and Tran as one of the five major challenges facing science journalism in the Global South, takes specific forms in Bangladesh that deserve careful examination. The heavy reliance on international sources in Bangladeshi science journalism is not simply a symptom of the inadequacy of domestic scientific expertise: it is also a symptom of the way in which journalistic routines, institutional relationships, and professional norms create patterns of source use that persistently favor internationally recognized expertise over locally based knowledge.

The most direct mechanism of international source dependence in Bangladeshi science journalism is the practice of following and adapting international science news rather than generating original locally grounded science reporting. A significant proportion of the science content in Bangladeshi newspapers and online news sites consists of adapted or translated versions of science stories originally reported by international outlets including BBC Science, Reuters Health, ScienceDaily, The Guardian's science section, and similar services. This practice is not inherently wrong: international science news often covers developments that are genuinely relevant to Bangladeshi readers, and providing access to global science information in Bangla performs a genuinely useful service. But when it crowds out original locally grounded science reporting, it represents a failure to serve the specific science information needs of Bangladeshi audiences, and it reproduces the epistemological hierarchy that positions international science as the primary reference point against which local knowledge is measured.

The challenge of diversifying the source ecosystem in Bangladeshi science journalism requires both individual journalistic effort and systemic change. At the individual level, the science journalist should actively cultivate sources among Bangladeshi scientists and researchers who

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are conducting original work on questions relevant to Bangladeshi audiences, including researchers at government institutions like BCSIR and BINA (Bangladesh Institute of Nuclear Agriculture), at public universities, at medical colleges, and at the independent research institutions that have emerged in recent decades. She should develop the scientific literacy to evaluate the work of these researchers critically and fairly, and the professional judgment to know when to seek international expert commentary to contextualize local research and when doing so would simply reproduce the hierarchy of epistemic authority that she is trying to challenge.

At the systemic level, diversifying the source ecosystem requires investment in Bangladeshi scientific communication, including the translation of Bangladeshi research into forms that are accessible to journalists and to the public, the development of directories of Bangladeshi scientific expertise organized by research area, and the creation of institutional relationships between science journalism organizations and research institutions that enable ongoing dialogue and source development. The model of science media centers, which exist in a number of countries including the United Kingdom, Australia, Germany, and Japan, and which provide journalists with rapid access to expert commentary on breaking science news, has not yet been fully developed in Bangladesh but represents a potentially valuable institutional innovation.

61.3 Traditional and Indigenous Knowledge as Scientific Source: Epistemological and Ethical Challenges

The inclusion of traditional and indigenous knowledge in science journalism reporting represents one of the most complex and contested areas of the epistemological and ethical challenges facing science journalists in Bangladesh. Bangladesh is a country with rich traditions of knowledge about agriculture, medicine, and environmental management that have developed over centuries of human experience with the specific ecological and social conditions of the delta. These knowledge traditions, held by farmers, fishermen, traditional healers, and community elders, contain accumulated empirical knowledge about local ecological conditions, effective practices for managing specific environmental challenges, and predictive frameworks for understanding seasonal and climatic variability that may not be fully captured in formal scientific literature.

The dialogue model of science journalism, which this textbook has advocated throughout, requires taking this knowledge seriously as a source: not as exotic supplementary color for stories primarily organized around the claims of formal science, but as a form of knowledge that has its own validity conditions, its own standards of evidence, and its own relationship to the ecological and social realities it describes. The Bangladeshi science journalist who covers climate change adaptation should be asking not only what the international scientific literature says about the effectiveness of different adaptation strategies but what the farmers and fishermen of the coastal delta, who have been managing climate variability for generations, know about the specific conditions of their environment and the specific responses that have worked and not worked in their experience.

But taking traditional knowledge seriously as scientific journalism source material also requires honest engagement with the epistemological challenges that this raises. Traditional knowledge is

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not uniformly reliable. Like formal science, it can be mistaken, incomplete, or distorted by cultural assumptions, power relations, and limited empirical feedback. The traditional healer who prescribes a plant remedy for a condition that requires antibiotic treatment is not serving the patient well, and the science journalist who uncritically celebrates traditional knowledge in opposition to formal medicine is not serving the public well either. The challenge is to develop the epistemological sophistication to assess the reliability of different forms of knowledge, traditional and formal, in specific contexts, neither dismissing traditional knowledge as mere superstition nor treating it as automatically valid because of its cultural authenticity.

The legal and intellectual property dimensions of traditional knowledge also create specific challenges for science journalism in Bangladesh. Traditional knowledge, including traditional agricultural varieties and traditional medicinal practices, has been subject to biopiracy: the appropriation by researchers and corporations in wealthy countries of knowledge developed by indigenous and traditional communities in developing countries, often without acknowledgment, compensation, or benefit-sharing with the communities whose knowledge has been taken. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, which was adopted under the Convention on Biological Diversity and which came into force in 2014, provides an international legal framework for protecting traditional knowledge against biopiracy, and Bangladesh is a party to the Convention on Biological Diversity.

The science journalist covering traditional knowledge and biopiracy in Bangladesh is engaged in investigative work at the intersection of scientific, legal, economic, and cultural politics that illustrates perfectly the complexity of the craft. She must understand enough of the relevant science to assess the validity of claims about the knowledge that has been appropriated. She must understand enough of the relevant law to assess whether specific acts of appropriation are violations of the Nagoya Protocol or other legal frameworks. She must understand enough of the economics of the pharmaceutical and agricultural biotechnology industries to trace how appropriated knowledge is converted into commercial products. And she must understand enough of the cultural politics of traditional knowledge to represent accurately and fairly the perspectives of the communities whose knowledge is at stake. This is demanding work, but it is exactly the kind of work that a mature and sophisticated science journalism in Bangladesh should be doing.

Chapter Sixty-Two: Open Science, Open Access, and the Democratic Promise of Knowledge Commons

62.1 The Open Science Movement and Its Significance for Bangladesh

The open science movement, which encompasses open access publishing, open data, open source software, open educational resources, and a broader commitment to making the processes and products of scientific research available to the widest possible public, represents one of the most significant institutional innovations in the global science system of the past two decades and one

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that has specific and potentially transformative implications for science journalism in Bangladesh. Understanding what open science promises, what it has actually delivered, and where its promise has been compromised by commercial interests and political inertia is essential preparation for the science journalist who wants to navigate the contemporary landscape of scientific information.

The foundational principle of open science is that scientific knowledge, produced by publicly funded researchers, should be publicly available without restriction. This principle challenges the business model of the commercial scientific publishing industry, which profits from restricting access to knowledge that was produced at public expense. It also challenges the cultural norms of scientific competition, which treat unpublished data and preliminary findings as proprietary assets to be protected from rivals rather than as public goods to be shared for the advancement of knowledge.

The open access dimension of open science has made the most visible progress in the period since 2000, with the number of open access journals, open access articles in hybrid journals, and preprint servers all growing substantially. For Bangladeshi science journalists, this progress is directly significant: the expanding body of freely available peer-reviewed literature makes it possible to cover scientific research with greater depth and accuracy than was possible when access to the primary literature required institutional subscription. The biomedical research available through PubMed Central, the physical sciences literature available through arXiv, the social sciences literature available through SSRN, and the growing number of open access journals across disciplines all represent resources that Bangladeshi journalists without institutional affiliations can access freely.

The open data dimension of open science is equally significant, though less widely recognized in journalism practice. The principle that the underlying data of scientific research should be publicly available, allowing independent verification and reanalysis of scientific claims, has been adopted as a policy requirement by a growing number of scientific journals and funding agencies. For the science journalist, access to underlying data is transformative: rather than being dependent on published papers, which present the interpretations of the original research team, the journalist can access the data itself and, with appropriate statistical literacy, evaluate whether the interpretations in the published paper are the most defensible ones.

62.2 Preprint Culture and the Challenges of Science Journalism in an Era of Preliminary Publication

One of the most significant and most underappreciated changes in the landscape of scientific communication in the period between 2019 and 2026 is the dramatic expansion of preprint culture in biomedical and social science research. Preprints, which are versions of research papers that have been posted publicly before undergoing formal peer review, have existed in physics and mathematics since the 1990s through the arXiv platform, but they expanded dramatically into biomedicine during the COVID-19 pandemic, when the urgency of the public health situation created demand for rapid sharing of research findings before the time-consuming process of peer review could be completed.

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The preprint revolution created specific and serious challenges for science journalism, because it made large volumes of unreviewed research publicly available and generated significant incentives for journalists to report on preliminary findings as if they were established facts. The coverage of COVID-19 preprints by journalists who either did not know or did not clearly communicate that they were reporting on unreviewed research contributed to a series of high-profile cases of misinformation about COVID-19 treatments, causes, and prevention strategies that have been extensively documented. The retraction of a high-profile preprint about hydroxychloroquine, and the subsequent course correction in media coverage, illustrated both the vulnerability of rapid preprint publication to the amplification of premature or flawed findings and the difficulty of adequately correcting misinformation once it has spread in the media environment.

For Bangladeshi science journalism, the preprint challenge is real and requires explicit attention in professional training. The science journalist in Bangladesh who encounters a preprint describing research relevant to a Bangladeshi health or environmental issue faces the decision of whether to report on it before peer review, and this decision requires careful weighing of the news value of preliminary findings against the risks of amplifying research that may be significantly flawed. There is no single correct answer to this question: it depends on the specific circumstances including the urgency of the public health issue, the quality and rigor of the preprint, the nature of the claims being made, and the likelihood that reporting will generate more benefit by informing public decision-making than it will harm by spreading preliminary conclusions as if they were settled facts.

The practical protocols for responsible preprint journalism are developing and have not yet been standardized. The core principles that most science journalism organizations have developed include clearly labeling preprints as unreviewed research, being conservative about the strength of conclusions reported from preprints, seeking expert commentary that is capable of evaluating the specific methodology of the preprint, and following up on preprints to report on their fate in the peer review process. These principles are sound as far as they go, but they require implementation in the specific conditions of Bangladeshi science journalism, where the density of scientific expertise available for rapid expert commentary is lower than in wealthy countries and where the media ecology is more susceptible to the rapid amplification of unverified claims through social media networks.

62.3 The Science of Replication and What Journalistic Errors Look Like

The replication crisis in multiple scientific disciplines, which has been one of the most extensively discussed methodological challenges in science over the past decade, has direct and important implications for science journalism that have not been adequately integrated into the training of Bangladeshi science journalists. The replication crisis refers to the finding, documented through systematic replication programs in psychology, behavioral economics, biomedicine, and other fields, that a large proportion of published research findings, when subjected to rigorous independent replication attempts, cannot be reproduced.

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The original estimates from the Open Science Collaboration's 2015 replication study in psychology, which found that approximately 36 percent of a sample of published psychology findings could be successfully replicated, generated extensive discussion about the reliability of scientific research and about the conditions, including small sample sizes, flexible research designs, publication bias against null results, and inadequate statistical power, that contribute to the production of non-replicable findings. Subsequent replication programs in behavioral economics, social psychology, preclinical cancer biology, and other fields have produced comparable or more troubling results, reinforcing the finding that the published scientific literature contains a substantial proportion of findings that are not robustly reliable.

For science journalism, the replication crisis raises fundamental questions about the relationship between published research and journalistic reporting. If a substantial proportion of published research in some fields cannot be replicated, then the journalism that reports on that published research as if it represented established fact is systematically misleading readers, even when the journalist has done everything conventionally expected of her: read the paper, interviewed the researchers, sought expert commentary, and accurately represented the conclusions of the published work. The problem is not with the journalism but with the assumption that peer-reviewed publication provides adequate quality assurance for the claims being reported.

The implication for science journalism practice is not that journalists should stop reporting on individual studies but that they should routinely provide their audiences with the information needed to understand the appropriate epistemic weight to assign to individual findings. This includes information about the field's base rate of replication, about the specific methodological features of the study being reported that are associated with higher or lower reliability (including sample size, pre-registration, the presence of conflicts of interest, and whether the finding is a replication of previous results or a novel claim), and about the current state of evidence on the topic more broadly. Providing this level of context requires a degree of scientific literacy and epistemological sophistication that is more demanding than the basic translation skills that the transmission model of science journalism requires, but it is exactly what the dialogue model of science journalism demands.

Chapter Sixty-Three: Climate Change Coverage as the Paradigm Case of International Science Journalism in Bangladesh

63.1 Why Climate Coverage Is Different: Stakes, Certainty, and the Politics of Denial

Climate change coverage represents the paradigm case of international science journalism in Bangladesh for several reasons that converge to make it both the most important and the most methodologically challenging topic area for Bangladeshi science journalists. It is the most important because Bangladesh is one of the countries most dramatically affected by the consequences of anthropogenic climate change, and the quality and comprehensiveness of public understanding of the science, the risks, and the available policy responses directly affects the lives and livelihoods of millions of Bangladeshi citizens. It is the most methodologically

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challenging because the science of climate change combines multiple disciplinary streams including atmospheric physics, oceanography, glaciology, ecology, and epidemiology in ways that require correspondingly broad scientific literacy to report accurately; because the political contestation around climate science is intense and well-funded in ways that systematically produce distortion and confusion in the public domain; and because the specific local manifestations of global climate change in Bangladesh require the science journalist to connect global scientific knowledge to local realities in ways that demand both international awareness and deep local knowledge.

The scientific consensus on anthropogenic climate change is as well-established as any finding in modern science. The Fifth and Sixth Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC), published in 2014 and 2021-2022 respectively, synthesize thousands of peer-reviewed studies and conclude with overwhelming confidence that the global climate is warming primarily due to human emissions of greenhouse gases, and that the consequences of continued warming include sea level rise, increased frequency and intensity of extreme weather events, disruption of precipitation patterns, and a wide range of ecosystem impacts with cascading consequences for human health, food security, and economic activity. For Bangladesh, the IPCC's assessments identify specific risks including inundation of coastal areas due to sea level rise, increased severity of tropical cyclones, disruption of monsoon patterns, increased flooding in major river systems, and saltwater intrusion into agricultural land that will have severe consequences for food security.

The Bangladeshi science journalist covering climate change therefore begins from a position of relatively strong scientific consensus, which is epistemologically different from reporting on areas of genuine scientific uncertainty where multiple competing hypotheses are supported by credible evidence. The appropriate journalistic response to strong scientific consensus is not to present it as simply one view among many equally credible alternatives, which would be the false balance approach extensively criticized in the science journalism literature, but to communicate the existence and character of the consensus clearly while accurately representing the genuine areas of remaining uncertainty, including the precise magnitude and timing of specific impacts, the effectiveness of different adaptation strategies, and the political feasibility of different mitigation scenarios.

63.2 Reporting Bangladesh's Specific Climate Situation: What the Science Says and What Journalism Must Add

The specific scientific picture of climate change in Bangladesh is complex and in several respects more nuanced than the international media narrative of Bangladesh as a country that will simply drown under rising seas. Understanding this complexity is essential for the science journalist who wants to report accurately and usefully rather than simply reproducing the dominant international narrative.

The sea level rise story, which is the most prominent element of the international climate narrative about Bangladesh, is real but incomplete. Sea level in the Bay of Bengal is rising, and this rise, combined with the natural subsidence of the Bangladesh delta and the reduction in

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sediment supply caused by upstream dams and embankment projects, is creating conditions of increasing coastal vulnerability that are not simply comparable to the situation facing, say, low-lying Pacific island nations. Bangladesh's delta is dynamic: it has been built up over millennia by the deposition of sediment from the Ganges-Brahmaputra-Meghna river system, and the processes of land building through sedimentation, as well as the processes of land loss through erosion and inundation, are complex and spatially heterogeneous. The science journalist who reports only on land loss and inundation without reporting on the dynamic processes through which the delta also builds new land is providing an incomplete picture.

The monsoon disruption story is similarly complex. Bangladesh's agriculture and freshwater supply are fundamentally dependent on the monsoon, and changes in monsoon patterns due to climate change have the potential to be deeply consequential. But the scientific projections for monsoon change in South Asia are among the areas of greatest uncertainty in regional climate science, partly because the monsoon system is extraordinarily complex and sensitive to multiple interacting drivers, and partly because the regional modeling capacity needed to project monsoon changes at the scale relevant to agricultural planning in Bangladesh is still developing. The science journalist who presents confident predictions about specific monsoon changes in Bangladesh is likely overstating the certainty of the scientific knowledge, and the journalist who says only that monsoon patterns are uncertain and that we cannot know what will happen is missing the important point that the direction of change, toward greater variability and more extreme events, is better supported than the specific magnitude and timing of those changes.

The glacial melt story, which concerns the melting of Himalayan glaciers due to climate change and its consequences for the rivers that flow through Bangladesh, is an area where the science has evolved significantly over the past decade and where earlier projections, including some statements that appeared in the IPCC's Fourth Assessment Report, were subject to significant correction. The initial claim that Himalayan glaciers would disappear by 2035 was based on a non-peer-reviewed source and was retracted by the IPCC, generating significant controversy about the quality control processes of the IPCC and about the relationship between scientific communication and policy advocacy in the climate context. For the Bangladeshi science journalist, this episode illustrates the importance of tracking the evolution of scientific claims over time and of being willing to report on corrections and revisions to the scientific record, even when those corrections complicate the narrative being told by powerful institutions with whom one has professional relationships.

63.3 Climate Finance, LOSS and Damage, and the Political Economy of International Climate Science in Bangladesh

The reporting on climate change in Bangladesh cannot be fully understood without engaging with the political economy of international climate finance and the specific role that climate science plays in the negotiations over the distribution of resources for climate adaptation and loss and damage compensation. This is an area where the relationship between science, politics, and journalism is particularly intimate and particularly contested, and where the science journalist is unavoidably involved in political processes that extend far beyond the conventional scope of science reporting.

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The principle that wealthy countries, which bear the primary historical responsibility for the greenhouse gas emissions driving climate change, should provide financial support to developing countries that are suffering its consequences, is now established in international climate law through the Paris Agreement and its subsequent elaborations, including the decision at the COP27 climate conference in 2022 to create a loss and damage fund. The establishment of this fund, and the ongoing negotiations about its governance, the sources of its funding, and the criteria for its use, represent a significant political and economic development with direct implications for Bangladesh, which is both a principal advocate for loss and damage finance and a country that has already incurred substantial economic losses attributable to climate change.

The role of science in the loss and damage context is to provide the evidence base for attributing specific losses and damages to climate change rather than to natural variability, and to quantify the magnitude of those losses and damages in ways that can inform international negotiations. This is a demanding scientific and political task, and it illustrates with particular clarity the way in which science is embedded in political processes rather than standing outside them as a neutral provider of facts. The science of attribution, which uses statistical techniques and climate models to estimate the fraction of a specific extreme event or trend that is attributable to anthropogenic climate change, has advanced significantly in the past decade, and Bangladesh has been the subject of attribution studies concerning specific cyclone events, flood events, and temperature extremes that provide the scientific basis for loss and damage claims.

The science journalist covering climate finance and loss and damage in Bangladesh is operating in a zone where scientific claims are directly translated into political and financial outcomes, where the accuracy and accessibility of her reporting has consequences not just for public understanding but for the national interest as it is understood by the Bangladeshi state. This creates specific pressures, including the pressure to report in ways that support Bangladesh's negotiating position in international climate talks, that the journalist must be aware of and must navigate with the same commitment to accuracy and independence that her reporting in any other area requires.

The broader context of Bangladesh's position in international climate politics changed significantly in 2024 and 2025, in ways that the Bangladeshi science journalist must understand. The withdrawal of the United States from active engagement in climate finance under the Trump administration created significant uncertainty about the future of international climate funding commitments, and the broader deterioration of multilateral institutions discussed in the context of South Asia's geopolitical shifts in 2025 created an environment of greater uncertainty about the international frameworks through which Bangladesh's climate interests are mediated. The science journalist who covers climate in this environment must be attentive to the ways in which political developments affect the science policy landscape, including the funding available for climate research in Bangladesh, the institutional relationships between Bangladeshi and international climate scientists, and the political willingness of the international community to act on the scientific evidence about Bangladesh's climate situation.

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Chapter Sixty-Four: The Sociology of International Science Journalism Associations and Bangladesh's Position Within Them

64.1 The World Federation of Science Journalists and the Global Professional Community

The World Federation of Science Journalists (WFSJ), founded in 2002 and bringing together member associations from more than fifty countries, is the primary international organization of the global science journalism professional community. The WFSJ's mission includes the development of science journalism as a profession globally, the provision of training and capacity-building support for science journalists in developing countries, the advocacy for press freedom and journalist protection, and the facilitation of international professional networks among science journalists across national boundaries.

Bangladesh's engagement with the WFSJ has been limited relative to the country's potential contribution to the international science journalism conversation, and this limitation reflects both the institutional underdevelopment of Bangladeshi science journalism professional associations and the structural barriers to international participation that affect journalists from poor countries with limited travel budgets and limited institutional support for international professional engagement. The WFSJ has developed programs specifically aimed at supporting science journalism in developing countries, including its online science journalism course and its mentoring program, but the take-up of these programs in Bangladesh has been uneven.

The student of science journalism should understand the international professional associations not as simple service providers but as institutions with their own internal politics, their own funding relationships, and their own assumptions about what science journalism is and what it should do. The WFSJ is funded by a combination of membership fees, conference revenues, and support from international donors including the European Commission and various scientific organizations. These funding relationships create institutional interests that may not align perfectly with the interests of science journalists in the developing world, and the internal governance of the federation reflects the unequal distribution of power within the global science journalism community in ways that should be visible to the critical observer.

The specific relevance of the WFSJ to Bangladeshi science journalism includes the potential to use the federation's international connections to support cross-border investigative reporting, to access professional development resources that are not available through domestic institutions, and to participate in the international professional conversations that are shaping the future of science journalism globally. But realizing this potential requires both the institutional capacity to participate meaningfully in international professional organizations and the critical awareness to engage with those organizations on terms that serve Bangladeshi interests rather than simply reproducing the hierarchies of the global science journalism community within which Bangladesh occupies a subordinate position.

64.2 Regional Science Journalism Organizations and the South Asian Context

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The regional dimension of the international professional landscape for Bangladeshi science journalists deserves attention that it has not always received. South Asia as a region shares specific scientific challenges, including monsoon variability, disaster risk, infectious disease burden, and agricultural vulnerability, that create the conditions for genuinely collaborative regional science journalism that could be both more efficient and more contextually appropriate than individual country-by-country coverage of these issues.

The South Asian Media Commission and various bilateral journalism exchange programs have created some regional professional connections, but the development of a genuinely regional science journalism community in South Asia faces significant political obstacles. The tensions between Bangladesh and India that intensified after August 2024 create specific difficulties for bilateral journalism collaboration, and the broader pattern of political competition and mistrust among South Asian states has historically impeded the development of regional professional organizations that cross political boundaries.

The potential for regional science journalism collaboration nevertheless exists and should be actively pursued. The coverage of shared environmental challenges including the Himalayan glacial melt, the Bay of Bengal's response to climate change, the trans-boundary air pollution that affects multiple South Asian capitals, and the shared disease burdens of neglected tropical diseases all represent areas where collaborative reporting across national boundaries could produce journalism that is better informed and more useful to audiences than anything that individual national journalism communities could produce alone.

The model of cross-border investigative journalism collaborations developed by organizations like Forbidden Stories, the Organized Crime and Corruption Reporting Project (OCCRP), and in the context of specific investigations like the Panama Papers and the Pandora Papers provides a template for how international journalistic collaboration can work, and these models are potentially applicable to regional science journalism collaboration in South Asia. The development of collaborative investigative journalism projects involving science journalists from Bangladesh, India, Pakistan, Nepal, and Sri Lanka, focused on shared environmental, health, and agricultural scientific challenges, would represent a genuine advance in the regional science journalism ecosystem.

64.3 The Bangladesh Science Communication Forum and Domestic Institutional Development

Alongside its engagement with international professional organizations, Bangladeshi science journalism requires the development of strong domestic institutions capable of setting professional standards, providing training, advocating for press freedom and journalist protection, and facilitating the community of practice that is the foundation of any mature profession. The existing landscape of professional organizations for journalists in Bangladesh includes the Dhaka Reporters Unity, the Bangladesh Federal Union of Journalists, and a number of more specialized professional associations, but the specific institutional infrastructure for science journalism as a professional specialization remains underdeveloped.

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The development of a Bangladesh Science Communication Forum, or a comparable institution with a mandate to support the professional development of science journalists, the promotion of science journalism standards, and the facilitation of connections between the journalism and scientific communities, would represent a valuable institutional advance. The design of such an institution should learn from both the strengths and the weaknesses of existing science journalism support organizations, including the tendency of such organizations to focus on training individual journalists without adequately addressing the institutional contexts within which they work, the risk of becoming too closely associated with the scientific establishment whose work they are supposed to subject to critical scrutiny, and the challenge of maintaining financial independence from the commercial and political interests that would prefer a more compliant science journalism.

The governance of a Bangladesh science communication institution should reflect the democratic values that this textbook has argued throughout must be central to science journalism's self-understanding. It should include representatives of the science journalism community, including women, journalists from outside Dhaka, and journalists working in digital and broadcast media as well as print. It should be accountable to the broader journalistic community and to the public interest rather than to the scientific establishment or to international donors whose interests may not align with the democratic function of Bangladeshi science journalism. And it should have a clear and enforceable code of ethics that addresses the specific challenges of science journalism in the Bangladeshi context, including the management of conflicts of interest, the protection of sources, the accurate representation of scientific uncertainty, and the ethical treatment of research subjects and affected communities.

Chapter Sixty-Five: International Scientific Protocols and Their Implications for Journalism

65.1 Understanding the Architecture of International Scientific Governance

The practice of international science is governed by a complex web of protocols, agreements, conventions, and institutional arrangements that collectively constitute what might be called the architecture of international scientific governance. For the science journalist covering international research collaborations, understanding this architecture is essential both for investigative reporting on whether the rules are being followed and for the analysis of how the rules themselves shape the conditions of scientific knowledge production.

The most fundamental layer of international scientific governance is the system of international scientific unions and councils, including the International Council for Science (ICSU, now reorganized as the International Science Council or ISC) and the various discipline-specific international unions like the International Union of Pure and Applied Chemistry (IUPAC) and the International Union of Biological Sciences (IUBS). These organizations set international standards for scientific methodology, nomenclature, and data sharing in their respective fields,

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and their decisions have practical consequences for the conditions under which research is conducted and communicated globally.

For Bangladesh specifically, the most directly relevant international scientific governance frameworks include the Convention on Biological Diversity and its Nagoya Protocol, which governs the use of genetic resources and associated traditional knowledge, with direct implications for research on Bangladeshi biodiversity and traditional agricultural varieties; the United Nations Framework Convention on Climate Change and the Paris Agreement, which govern international cooperation on climate change including the science that underpins climate negotiations; the International Health Regulations of the World Health Organization, which govern the international reporting and response to disease outbreaks and which directly affect the science journalism around public health in Bangladesh; and the various international agreements governing nuclear science and technology, which are relevant to Bangladesh's nuclear energy program.

65.2 Research Ethics Protocols in International Context: The Declaration of Helsinki and Beyond

The Declaration of Helsinki, adopted by the World Medical Association in 1964 and revised multiple times since, is the foundational international document governing the ethics of medical research involving human participants. Its principles, including the requirement for informed consent, the prohibition of research that exposes participants to risks disproportionate to potential benefits, and the requirement for independent ethics review, are incorporated into the national research ethics frameworks of most countries and are a condition of publication in most peer-reviewed medical journals.

For Bangladeshi science journalism, the Declaration of Helsinki is directly relevant because Bangladesh is an active site of medical research, including clinical trials of new drugs and vaccines, epidemiological research on disease burden and risk factors, and health systems research on the effectiveness of different approaches to health service delivery. The science journalist covering any of these areas should understand the ethical framework that governs the research, including the requirement that Bangladesh has its own national ethics review infrastructure and that the ethics review process should be genuinely independent of the commercial interests of research sponsors.

The specific provision of the Declaration of Helsinki that has generated the most controversy in the context of developing-country research is the provision concerning standard of care. The question of what standard of care must be provided to control groups in clinical trials conducted in developing countries, where the locally available standard of care may be much lower than in wealthy countries, has been the subject of intense ethical and political debate. The controversy over placebo-controlled trials of interventions for which effective treatments exist illustrates the way in which the application of international ethical principles in developing-country contexts requires both fidelity to the universal principles and sensitivity to the specific conditions of the local context, and the science journalist covering clinical trials in Bangladesh must be equipped to engage with these complexities rather than either dismissing ethics concerns as purely

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academic or uncritically accepting the claims of international research institutions that their work meets the highest ethical standards.

65.3 Open Science Protocols and Their Implementation in Bangladesh

The growing body of international open science protocols, including the FAIR principles for research data (requiring that data be Findable, Accessible, Interoperable, and Reusable), the various discipline-specific data sharing mandates of international funders and journals, and the pre-registration requirements for clinical trials and increasingly for observational studies, create a set of expectations about the transparency and reproducibility of scientific research that have significant implications for the coverage and evaluation of international research involving Bangladesh.

The implementation of these protocols in the Bangladeshi research context is uneven. The major research institutions in Bangladesh, particularly those that are heavily engaged with international collaborative research, have made progress toward compliance with international open science standards, partly because compliance is increasingly a condition of publication in prestigious international journals and of eligibility for international research funding. But smaller institutions, research conducted primarily for domestic audiences, and research in fields with less developed open science cultures may not meet these standards, and the science journalist who assumes that the presence of open science rhetoric in institutional communications reflects genuine implementation of open science principles may be misled.

The investigative potential of open science protocols for science journalism is significant. When an international research institution claims to have shared its data from a study conducted in Bangladesh, the FAIR principles provide a specific standard against which that claim can be evaluated: is the data findable in a publicly accessible repository? Is it genuinely accessible without technical or legal barriers? Is it documented sufficiently to be interoperable with other datasets? And is it available for reuse by others, including Bangladeshi researchers who might want to conduct follow-up analyses? These are specific, checkable claims that the science journalist can investigate using publicly available information, and the gap between the rhetoric of open science and its actual implementation is itself a potentially significant story.

Chapter Sixty-Six: Building Genuine International Professional Connections on Terms of Equality

66.1 The Difference Between Networking and Dependency

The cultivation of international professional connections is, for the Bangladeshi science journalist, both an obvious necessity and a potential trap. The necessity is obvious because, as this entire Part Seven has argued, the science that the Bangladeshi journalist covers is increasingly international in its production and in its implications, and the journalist who lacks access to the international scientific and journalistic community is systematically disadvantaged

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in her ability to do her work well. The trap is less obvious but equally real: the cultivation of international connections from a position of structural disadvantage can reproduce rather than transform the patterns of dependency that characterize Bangladesh's relationship to the global science ecosystem.

The difference between international professional networking that is genuinely empowering and international professional networking that reproduces dependency lies in the nature of the relationships cultivated and the terms on which they are built. Networking that is built on the assumption that the Bangladeshi journalist is a student or a beneficiary and the international partner is a teacher or a donor tends to reproduce the hierarchical structure of the global science journalism community. Networking that is built on the assumption of mutual learning, on the recognition that the Bangladeshi journalist has knowledge, expertise, and perspectives that are genuinely valuable to her international counterparts, and on the creation of reciprocal relationships in which both parties benefit, has the potential to create something different.

The recognition that Bangladeshi science journalists have something to offer to the global science journalism community, not just something to receive from it, is not merely a motivational affirmation but an epistemological claim that this textbook has argued throughout is empirically grounded. The Bangladeshi journalist who covers climate change in the delta brings perspectives and knowledge that no international journalist, however well-resourced and well-intentioned, can substitute for: knowledge of the specific communities affected, understanding of the specific institutional context, familiarity with the specific scientific landscape, and the linguistic and cultural competences needed to access the knowledge held by communities that do not communicate in English or French or German. This knowledge is genuinely valuable to the global science journalism conversation, and the Bangladeshi journalist who brings it to international collaborations should do so on terms that recognize its value rather than treating it as mere local color for stories whose intellectual framework is set by international partners.

66.2 Cross-Border Investigative Journalism: Models and Methods

Cross-border investigative journalism, in which journalists from different countries collaborate on investigations that cross national boundaries, has emerged over the past two decades as one of the most important innovations in global journalism, and it represents one of the most promising models for Bangladeshi science journalism's engagement with the international professional community. The major cross-border investigations of recent decades, including the Panama Papers (2016), the Pandora Papers (2021), the FinCEN Files (2020), and the various investigations conducted by the Organized Crime and Corruption Reporting Project (OCCRP), have demonstrated that journalism collaborations across national boundaries can produce investigations of extraordinary scope and impact that would be impossible for any single national journalism organization to conduct alone.

For science journalism specifically, the cross-border investigative model is applicable to a range of important topics including the operations of pharmaceutical companies in Bangladesh and across South Asia, the environmental impacts of multinational corporations operating in Bangladesh, the functioning of international research funding flows and their effects on local

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scientific capacity, and the specific scientific and policy issues surrounding climate change adaptation and loss and damage in the region. Each of these topics involves institutions and processes that span national boundaries, and their investigation requires the combination of local knowledge and international access that cross-border collaboration uniquely provides.

The specific organizational models for cross-border investigative journalism vary, and the Bangladeshi science journalist interested in participating in this form of work should understand both the successful models and their limitations. The Organized Crime and Corruption Reporting Project provides a network of regional centers that coordinate investigative work across large geographic areas, with a central editorial team that provides support for complex international investigations. The International Consortium of Investigative Journalists (ICIJ), which organized the Panama Papers and Pandora Papers investigations, provides a model for managing very large, very sensitive investigations involving hundreds of journalists in dozens of countries through a highly structured collaboration with strict information security protocols.

The specific challenges of cross-border science journalism investigations include the technical challenge of communicating and sharing information securely across borders, the methodological challenge of developing agreed standards for the evaluation of scientific claims across disciplinary traditions that may differ between countries, the editorial challenge of maintaining consistent journalistic standards across newsrooms with different editorial cultures and commercial pressures, and the legal challenge of understanding how different countries' laws about defamation, state secrets, and information classification apply to journalists participating in cross-border investigations.

Digital security is a particularly critical dimension of the operational planning for cross-border science journalism investigations, especially when the investigation involves sensitive information about powerful institutions with the capacity to conduct surveillance of the journalists involved. The specific threats in the Bangladeshi context, including the surveillance capabilities of the Bangladeshi state and the technical means available to powerful commercial interests, must be assessed as part of the planning for any cross-border investigation involving Bangladeshi journalists, and appropriate countermeasures, including end-to-end encrypted communication, secure file sharing platforms, and operational security practices that minimize the risk of digital interception, must be integrated into the collaboration's workflow from the beginning.

66.3 International Sources and the Ethics of Translation

The Bangladeshi science journalist who works with international scientific sources faces a specific ethical challenge that deserves explicit discussion: the ethics of translation. The journalist who reports on international science for a Bangladeshi audience is engaged in a process of translation that is not merely linguistic but cultural and contextual. She is taking scientific knowledge produced in one context and making it legible in another, and the choices she makes in that process of translation are not neutral: they shape what the audience understands, what they find relevant, and how they evaluate the claims being made.

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The most important ethical requirement of this translational work is accuracy, and accuracy in translation is a more demanding standard than it might appear. Accurate translation of scientific claims for a Bangladeshi audience requires not just finding Bangla equivalents for English scientific terminology but understanding the underlying concepts well enough to represent them in ways that are genuinely equivalent in meaning rather than merely superficially parallel in form. The temptation to translate technical claims into simpler formulations that are easier for audiences to understand must be balanced against the obligation not to introduce distortions that change the meaning of the claims being translated.

The choice of what to translate, which is as important as how to translate it, should be guided by an assessment of what is genuinely relevant to Bangladeshi audiences rather than by what is available in international science media. The Bangladeshi science journalist who simply translates the stories that are trending in English-language science media is making an implicit statement about whose scientific agenda matters, and that statement reflects the power hierarchies of the global science journalism community rather than the specific knowledge needs of Bangladeshi audiences. The journalist who actively seeks out the international scientific developments most relevant to Bangladesh, even when those developments are not trending in English-language media because they are of primary relevance to people in poor countries, is doing something epistemologically and democratically important.

Chapter Sixty-Seven: Controversies in International Scientific Collaboration -- Historical and Contemporary Cases

67.1 The History of Research Ethics Controversies in Bangladesh: Learning from Institutional Failure

The history of research ethics controversies involving international research collaborations in Bangladesh provides the student of science journalism with essential context for understanding the importance of rigorous reporting on the ethics of international research. This history is not well-documented in the journalistic record, partly because many of the controversies that have occurred have been managed through internal institutional processes rather than through public accountability, and partly because the culture of deference to scientific authority in both the journalistic and the public sphere has created barriers to the kind of critical reporting on research ethics that would be needed to expose and address violations.

The most extensively documented research ethics controversy in the history of international health research in Bangladesh involves the conduct of clinical trials of interventions for diarrhoeal disease, which has been a major focus of international research at ICDDR,B and other institutions. The controversy over the conduct of specific trials, including questions about the adequacy of the informed consent process, the nature of the benefits provided to participants, and the distribution of the benefits of research findings, has been discussed in the academic literature on research ethics in developing countries, though comprehensive journalistic investigation of specific cases has been limited.

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The arsenic contamination crisis of the 1990s and 2000s provides another historically important case study for science journalism. The discovery that the tube wells installed across Bangladesh by international development agencies to provide access to clean drinking water were contaminated with naturally occurring arsenic at concentrations far exceeding safe drinking limits represented an enormous public health failure that affected tens of millions of people. The institutional dynamics surrounding the initial discovery, the delayed public communication of the contamination problem, and the slow and inadequate response of both the Bangladeshi government and the international development organizations involved have been the subject of both scientific and journalistic investigation.

The arsenic crisis illustrates several key themes for science journalism: the way in which well-intentioned international scientific and development interventions can produce unforeseen harms; the institutional dynamics that can delay the acknowledgment and communication of those harms; the role of science journalism in bringing public health information to the attention of affected communities; and the specific challenges facing science journalists who investigate the failures of powerful international institutions with which they have professional relationships. The journalists and researchers who documented the arsenic crisis, including those whose work eventually forced the issue onto the public agenda, performed a genuinely important democratic function, and their work provides a model for the kind of critical engagement with international scientific institutions that Bangladeshi science journalism needs to be capable of.

67.2 Conflicts of Interest in International Research Involving Bangladesh

The management of conflicts of interest is one of the most contentious and complex challenges in international research ethics, and its specific manifestations in the Bangladeshi context reflect both the general problems of research conflicts of interest internationally and the specific conditions of research in a country where institutional independence from commercial and political interests is difficult to maintain.

The most thoroughly documented domain of conflicts of interest in international research involves the pharmaceutical industry, which has an extensive history of funding research on its products in ways that systematically produce more favorable results than independent research. The methodology of industry-sponsored clinical trials, the selective publication of results favorable to industry sponsors, and the financial relationships between industry sponsors and academic researchers who serve as principal investigators or expert commentators have all been subject to extensive investigation in the context of research conducted in wealthy countries, and the same phenomena operate in the context of clinical trials and health research conducted in Bangladesh.

For the Bangladeshi science journalist, the investigation of pharmaceutical industry conflicts of interest in research conducted in Bangladesh requires access to several categories of information that are not always readily available: the financial relationships between researchers and industry sponsors, which should be disclosed in published papers and in ethics review applications; the terms of the contractual arrangements between industry sponsors and research institutions, which often contain provisions about publication rights and data access that affect the independence of

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the research; and the regulatory history of specific drugs and interventions, which can reveal patterns of selective reporting and study suppression.

The investigation of conflicts of interest requires the science journalist to develop a nuanced understanding of the difference between illegitimate conflicts of interest that compromise the integrity of research and legitimate financial relationships between researchers and industry that do not necessarily compromise integrity. Researchers who are funded by industry to conduct research are not necessarily biased in their findings, and the science journalist who treats any industry connection as evidence of corruption is making a journalistic error as serious as the journalist who never asks about financial relationships at all. The appropriate standard is transparency and disclosure: the relationship between researchers and their funders should be disclosed fully and prominently, and the audience should be given the information needed to assess the potential significance of those relationships for the credibility of the research.

67.3 The Ethics of Reporting on Unpublished and Leaked Science

One of the most ethically complex situations the science journalist covering international research collaborations can face is the receipt of unpublished scientific data, draft manuscripts, or confidential research documents, either through deliberate leaks by sources with access to the information or through inadvertent disclosure. These situations raise overlapping ethical, legal, and journalistic questions that do not have simple or universally agreed answers.

The journalistic case for reporting on unpublished and leaked scientific information rests on the public interest principle: when unpublished science contains information that would significantly affect public understanding of an issue of major public importance, the public's right to that information may override the interests of the researchers and institutions who want to control the timing and framing of its disclosure. The climate scientist whose data shows that a specific industrial facility is contaminating the groundwater of a major city, or the epidemiologist whose analysis of disease surveillance data shows that a government agency has suppressed evidence of an outbreak, has information that the public needs, and if she is unable to publish it through normal channels because of institutional pressure, whistleblower protection and source protection for the journalist may be appropriate.

The journalistic case against publishing unpublished science rests on the epistemological principle that peer review, for all its imperfections, performs a genuine quality assurance function and that publication of unreviewed research creates the risk of misleading the public about findings that may be significantly revised or retracted following peer review. The case of the retracted hydroxychloroquine preprints discussed earlier in this chapter illustrates this risk.

The resolution of this tension in specific cases requires careful judgment that takes into account several factors: the magnitude of the public interest in the information, the quality of the evidence that the unpublished science is being suppressed for reasons of institutional self-interest rather than legitimate quality control, the ability of the journalist to independently verify the scientific claims in the document, the risks to the source that reporting would create, and the availability of other means by which the information could reach the public. There is no formula

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for this judgment, and the science journalist who faces it should seek advice from colleagues, from legal counsel, and from the professional ethics literature, while recognizing that the ultimate decision is hers and that she bears the responsibility for the consequences.

Chapter Sixty-Eight: The Future Architecture of Bangladeshi Science Journalism in the Global Context

68.1 The Conditions for Genuine Equality in the Global Science Journalism Community

The vision of Bangladeshi science journalism's relationship to the global science journalism community that this Part Seven has been developing is a vision of genuine equality rather than of formal inclusion in structures that remain hierarchically organized. This vision is not utopian: it is grounded in the recognition that the specific knowledge, expertise, and perspectives that Bangladeshi science journalists bring to the global conversation are genuinely valuable, and that the global science journalism community is impoverished by the structures that prevent their full inclusion and expression.

The conditions for genuine equality in the global science journalism community include the development of adequate domestic institutional capacity in Bangladeshi science journalism, without which individual Bangladeshi journalists cannot participate in international collaborations from a position of institutional strength; the reform of the global scientific publishing system in ways that genuinely democratize access to scientific literature, including access not just for readers but for authors who lack the resources to pay article processing fees; the development of a global science journalism culture that actively values and incorporates the perspectives of journalists and scientists from the Global South rather than treating them as exotic supplements to a conversation whose terms are set elsewhere; and the political will among international donors and professional organizations to invest in the institutional development of science journalism in countries like Bangladesh rather than focusing narrowly on individual capacity-building.

These conditions are not currently in place, and their creation requires sustained political and institutional effort over a period of years. But the direction of change is not entirely discouraging. The open science movement, for all its limitations, has democratized access to scientific literature in ways that were not imaginable twenty years ago. The cross-border investigative journalism model has demonstrated that genuinely collaborative international journalism is possible and productive. The growing recognition in the international science journalism community of the importance of perspectives from the Global South has created at least the rhetorical space for a more equitable conversation, even if the structural conditions for equality are not yet in place.

68.2 Emerging Technologies and the Global-Local Interface in Bangladeshi Science Journalism

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The technological landscape for science journalism is evolving rapidly in ways that affect the global-local interface in Bangladeshi science journalism specifically. Artificial intelligence tools for text analysis, data visualization, and automated translation are changing what individual journalists can do with limited resources, potentially reducing some of the disadvantages that resource-poor journalism organizations in Bangladesh face relative to their wealthy-country counterparts. The proliferation of open data platforms and scientific databases makes increasing volumes of primary scientific data available to journalists without institutional affiliations. And the development of social media and digital publishing platforms has reduced, though by no means eliminated, the advantage that wealthy-country media organizations enjoy in reaching large audiences.

The specific potential of AI-assisted translation for Bangladeshi science journalism deserves attention. The ability to automatically translate scientific literature from English into Bangla, and from Bangla scientific communication into English for international audiences, could significantly reduce the linguistic barriers that currently constrain the flow of scientific knowledge in both directions. Current AI translation systems, including those based on large language models, have reached a level of quality sufficient for many translation tasks, including the translation of scientific abstracts and press releases, though they continue to require expert human review for technical content where precision of meaning is critical.

The more fundamental opportunity presented by AI tools for Bangladeshi science journalism is the potential for AI-assisted data analysis to expand the investigative reach of journalists who lack the technical staff to conduct large-scale quantitative analysis independently. The use of AI tools to identify patterns in large datasets, to detect anomalies that might indicate research misconduct, to analyze financial flows between research institutions and commercial sponsors, and to systematically compare pre-registered research designs with published results represents a genuine expansion of the investigative toolkit for science journalists working in resource-constrained environments.

But the responsible use of AI tools in science journalism requires the same critical awareness that this textbook has argued throughout should characterize the science journalist's engagement with all sources of authority. AI systems can make systematic errors that are not obvious to users who do not have the technical knowledge to evaluate their outputs, can perpetuate the biases present in their training data, and can produce outputs that appear authoritative while being significantly wrong. The science journalist who uses AI tools for research or analysis must develop the capacity to critically evaluate AI outputs rather than accepting them uncritically, and must be transparent with her audiences about the role of AI tools in the production of her journalism.

68.3 The Next Generation: Science Journalism Education and the Formation of a Critical Professional Community

The formation of the next generation of Bangladeshi science journalists is the most fundamental long-term challenge facing the field, because the institutional changes and the cultural transformations that this textbook has argued throughout are necessary cannot be accomplished

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without a sufficient number of well-trained, critically aware, professionally committed, and institutionally supported science journalists working across the full range of Bangladeshi media.

The current state of science journalism education in Bangladesh reflects the broader challenges facing the journalism education sector, including inadequate resources, curriculum that is often more focused on technical skills than on the critical and analytical capacities that sophisticated science journalism requires, limited connections between journalism education programs and the scientific and professional communities that science journalists need to engage with, and a general orientation toward producing journalists who fit the existing structures of Bangladeshi media rather than journalists capable of transforming those structures.

The reform of science journalism education in Bangladesh requires the integration of scientific literacy into journalism curricula at a level that goes beyond the basic fact-checking of numerical claims to include genuine understanding of scientific methodology, research design, statistical inference, and the institutional sociology of science. It requires the development of educational partnerships between journalism programs and science departments that provide journalism students with genuine exposure to scientific research practices rather than simply the public communication of science. It requires the development of case-based pedagogy that uses specific historical and contemporary cases from Bangladeshi science journalism to develop the analytical and ethical capacities that the field requires, rather than relying primarily on generic journalism training methods developed in wealthy countries.

The most important thing that science journalism education can do for the next generation of Bangladeshi science journalists is to cultivate not just skills and knowledge but a particular orientation toward the world: an orientation of critical curiosity, epistemological humility, democratic commitment, and professional courage that refuses both the naive scientism that treats scientific authority as beyond question and the anti-scientific populism that denies the genuine achievements and genuine importance of scientific knowledge for human welfare. This orientation is not simply a set of attitudes that can be instilled through classroom instruction: it is a professional identity that must be developed through practice, through mentorship, through engagement with the professional community, and through the experience of doing real science journalism under conditions that are genuinely challenging.

Chapter Sixty-Nine: Theoretical Synthesis and the Jurisprudential Framework of International Scientific Governance

69.1 Theories of International Scientific Governance: From Realism to Cosmopolitanism

The theoretical frameworks available for understanding Bangladesh's position in the global science journalism ecosystem draw on multiple intellectual traditions that rarely engage directly with each other but that illuminate different dimensions of the same complex reality. The international relations traditions of realism, liberalism, and constructivism each offer partial accounts of how the global science system is organized and how Bangladesh relates to it. The

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theories of knowledge production from science and technology studies provide the epistemological foundations for understanding what science is and how it is shaped by its social and political context. The legal frameworks of international intellectual property law, international human rights law, and international environmental law create the specific normative architecture within which scientific collaboration and knowledge production are governed. And the political theory traditions of cosmopolitanism, postcolonialism, and democratic theory provide the normative frameworks for evaluating whether the existing arrangements are just and what alternatives might be imagined.

The realist tradition in international relations, which analyzes international affairs primarily in terms of the competition for power among sovereign states, provides a framework for understanding why international scientific collaboration is always also geopolitical competition, why the distribution of scientific capacity tracks the distribution of military and economic power, and why the claims of pure scientific universalism are always partially deceptive. The realist analysis of Chinese scientific investment in South Asia, for instance, would emphasize the role of scientific soft power in China's broader strategy of expanding its influence in the region, and would caution against naive acceptance of the purely benevolent framing with which such investments are typically presented.

The liberal institutionalist tradition, which emphasizes the role of international institutions and multilateral cooperation in managing the challenges of international interdependence, provides a framework for understanding the international scientific governance architecture discussed in Chapter Sixty-Five and for evaluating the effectiveness of international scientific organizations and agreements in managing the challenges of global science governance. The liberal institutionalist would point to the genuine achievements of the international scientific governance system, including the coordination of global disease surveillance through the WHO, the management of global climate science through the IPCC, and the development of international standards for research ethics through the Declaration of Helsinki, while also recognizing the significant limitations of these institutions and the need for their reform.

The constructivist tradition, which emphasizes the role of ideas, norms, and identities in shaping international behavior, provides a framework for understanding how the specific norms of the scientific community, including the norms of openness, universality, disinterestedness, and organized skepticism that Robert Merton identified as the normative structure of science in the 1940s, create both the possibilities and the constraints of international scientific collaboration. The constructivist would emphasize that the Bangladeshi scientist's ability to participate in international science depends not just on the material resources she has access to but on whether the international scientific community recognizes her as a legitimate participant whose knowledge claims deserve serious attention.

The postcolonial tradition, which is not primarily a theory of international relations but a broader critical framework for understanding the continuing effects of colonialism on contemporary knowledge production, politics, and culture, provides the framework that this textbook has drawn on most extensively throughout Part Seven. The postcolonial analysis of international scientific collaboration emphasizes the way in which the structures of global science reproduce colonial

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patterns of knowledge extraction, intellectual dependency, and the denial of epistemic authority to scientists and scholars from formerly colonized societies. It demands the decolonization of knowledge not as a rejection of science but as a transformation of the conditions under which science is produced, validated, and communicated to make them genuinely inclusive of the perspectives and priorities of people who have historically been excluded.

69.2 The Jurisprudence of International Intellectual Property and Science Journalism

The legal framework of international intellectual property, particularly as it applies to scientific knowledge, is a domain that the science journalist in Bangladesh must understand because it directly shapes the conditions under which scientific information can be accessed, shared, and communicated, and because it represents one of the primary legal mechanisms through which the global political economy of science is enforced.

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which was negotiated as part of the Uruguay Round of trade negotiations and came into force in 1995 as an agreement administered by the World Trade Organization, established minimum standards for the protection of intellectual property rights that all WTO member states, including Bangladesh, are required to implement in their domestic law. The intellectual property standards established by TRIPS include minimum terms of copyright protection, patent protection for pharmaceutical products and processes, and protection for trade secrets and confidential commercial information, all of which have implications for the access of Bangladeshi researchers and journalists to scientific knowledge.

The pharmaceutical patent provisions of TRIPS have been particularly consequential for access to medicines in developing countries, and the political controversy over TRIPS and access to medicines represents one of the most important intersections of international law, science, and journalism. The debate over whether TRIPS's pharmaceutical patent provisions should be modified to allow developing countries to manufacture or import generic versions of patented medicines for public health purposes generated extensive international advocacy, eventually resulting in the 2001 Doha Declaration on TRIPS and Public Health, which affirmed the right of WTO members to use compulsory licensing and other flexibilities in the TRIPS agreement to protect public health.

For Bangladeshi science journalism specifically, the TRIPS agreement and its public health implications is a story of considerable domestic importance. Bangladesh, as a least-developed country (LDC) under WTO definitions, has historically enjoyed exemptions from some of TRIPS's pharmaceutical patent obligations, including an exemption allowing it to produce or import generic pharmaceuticals without the consent of patent holders. However, Bangladesh's graduation from LDC status, which was scheduled to occur in 2026 and which has been a subject of significant negotiation and concern, would eliminate these exemptions and subject Bangladesh's pharmaceutical sector to the full force of TRIPS's pharmaceutical patent obligations, with potentially significant consequences for the accessibility and affordability of medicines.

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This is precisely the kind of science-law-politics story that a mature Bangladeshi science journalism should be covering systematically, with the technical depth needed to explain the legal provisions, the scientific context needed to explain what medicines are at stake, the economic analysis needed to explain what the cost consequences of TRIPS compliance would be, and the political analysis needed to explain the international negotiating dynamics and the domestic policy choices available to Bangladesh. It is a story that requires all three of the journalist roles this textbook identified in Chapter One: the translator who can explain complex legal and scientific content to non-specialist audiences; the critic who can evaluate the claims of all parties to the dispute; and the witness who can document the lived consequences of intellectual property law for patients and communities in Bangladesh.

69.3 Human Rights Law and the Protection of Science Journalism

The international human rights framework, particularly the freedom of expression protections guaranteed in the International Covenant on Civil and Political Rights (ICCPR) and the protections for scientists and researchers established in the International Covenant on Economic, Social and Cultural Rights (ICESCR), provides the human rights legal basis for the protection of science journalism as a form of professional speech with a specific democratic function.

Article 19 of the ICCPR guarantees the right to freedom of expression, including the freedom to seek, receive, and impart information and ideas of all kinds regardless of frontiers. The Human Rights Committee, which monitors implementation of the ICCPR, has interpreted this provision to include specific protections for journalism, including the protection of journalists from legal threats that have a chilling effect on their reporting, the protection of journalistic sources from compelled disclosure, and the obligation of states to refrain from using legitimate security and public order restrictions as pretexts for suppressing journalism that is inconvenient to the government.

The right to enjoy the benefits of science and its applications, guaranteed in Article 15(b) of the ICESCR, and the freedom indispensable for scientific research, guaranteed in Article 15(3), provide a human rights foundation for arguing that the science journalist's work, which makes the benefits of scientific knowledge accessible to the public and which maintains the conditions of freedom and accountability under which science can flourish, is protected by international human rights law.

The relevance of this human rights framework for Bangladeshi science journalism is both normative and practical. Normatively, the human rights framework provides the strongest possible foundation for the democratic claims of science journalism: the claim that science journalism is not merely a commercial activity but a fundamental human rights activity whose protection is an obligation of the state under international law. Practically, the human rights framework provides Bangladeshi science journalists and their organizations with legal arguments and international advocacy resources that can be deployed in response to legal threats and press freedom violations.

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The specific invocation of international human rights law in the context of Bangladeshi press freedom, discussed extensively in earlier parts of this textbook, provides the institutional context within which the human rights dimension of science journalism protection must be understood. The documented use of the Digital Security Act and its successor legislation to prosecute journalists who reported critically on scientific and health issues represents a specific violation of the Article 19 obligations that Bangladesh has assumed under the ICCPR, and the international human rights bodies that monitor compliance with the ICCPR have consistently called for the reform of Bangladeshi press law in ways that would bring it into compliance with international standards.

Coda to Part Seven: Toward a Critical Cosmopolitanism in Bangladeshi Science Journalism

The argument of Part Seven, taken as a whole, points toward a vision of Bangladeshi science journalism that might be characterized as critical cosmopolitanism: a genuine openness to and engagement with the global scientific and journalistic community, but an openness that is grounded in critical awareness of the power relations, institutional arrangements, and epistemological assumptions that structure the global community, and that insists on the full recognition of Bangladeshi epistemic authority and democratic interests rather than the subordination of those interests to the agendas of international partners, however well-intentioned those partners may be.

The critical cosmopolitan science journalist is internationally connected without being internationally dependent. She reads the international scientific literature and engages with the international science journalism community while maintaining the critical distance needed to evaluate what those literatures and communities take for granted. She builds genuine international professional relationships on the basis of mutual respect and mutual benefit, rather than positioning herself as a student or beneficiary in a relationship of structured inequality. She uses international scientific sources as one important input to her reporting while never treating international authority as a substitute for independent local investigation. And she advocates within international professional communities for the structural changes needed to make the global science journalism ecosystem genuinely inclusive of the perspectives and priorities of people in countries like Bangladesh.

The critical cosmopolitan science journalist also maintains a powerful local anchor. She is rooted in the specific conditions of Bangladeshi society, Bangladeshi politics, Bangladeshi science, and the specific communities whose lives are most directly affected by the scientific and technological changes she covers. She speaks for those communities not by claiming to represent their views uncritically but by ensuring that their knowledge, their experiences, and their interests are present and legible in a global conversation that has systematically excluded them. And she measures the success of her work not by the standards of the international science journalism community but by the standard that is most fundamental to the democratic function of

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journalism: whether the people whose lives are most affected by the issues she covers are better equipped to understand, to participate in, and to shape the decisions that matter most to them.

This vision is demanding. It requires more of the science journalist than either the naive internationalism that uncritically adopts international standards or the defensive localism that rejects international engagement as inherently compromised. It requires intellectual breadth, professional courage, institutional support, and the willingness to hold simultaneously in mind the claims of universal scientific knowledge and the specific, irreducible conditions of Bangladeshi life. It is, in short, the vision of a mature and genuinely excellent science journalism, and it is the vision that the remaining parts of this textbook will continue to pursue.

Chapter Notes and Further Reading for Part Seven

On the political economy of global science, Philip Mirowski and Esther-Mirjam Sent's edited volume "Science Bought and Sold: Essays in the Economics of Science" (2002) provides the foundational critical analysis. Yochai Benkler's "The Penguin and the Leviathan" (2011) develops a more optimistic account of commons-based knowledge production. Mariana Mazzucato's "The Entrepreneurial State" (2013) provides the essential analysis of the role of public investment in scientific innovation. Ashis Nandy's "Science, Hegemony and Violence: A Requiem for Modernity" (1988) is the foundational postcolonial text on science in the Global South.

On open science and open access, Peter Suber's "Open Access" (2012) is the essential introduction. The Budapest Open Access Initiative's tenth anniversary statement (2012) documents the evolution of the open access movement's goals. The San Francisco Declaration on Research Assessment (DORA, 2012) and the Leiden Manifesto (2015) provide critical frameworks for evaluating research quality beyond journal impact factor. For open data specifically, the FAIR principles published by Wilkinson and colleagues in Scientific Data in 2016 are the foundational reference.

On science journalism in the Global South, the systematic review by An Nguyen and Minh Tran published in Public Understanding of Science in 2019 is the most comprehensive current reference. Bauer, Howard, Ramos, Massarani, and Amorim's "Global Science Journalism Report" (2013) from LSE and SciDev.Net provides the most comprehensive cross-national survey of science journalism conditions. Bruce Lewenstein's "Models of Public Communication of Science and Technology" (2003) provides the theoretical framework for the analysis of competing models in science communication.

On research ethics and international collaboration, Jonathan Moreno's "Undue Risk: Secret State Experiments on Humans" (1999) provides the historical context for contemporary research ethics. Ezekiel Emanuel, Christine Grady, Robert Crouch, and colleagues' edited "The Oxford Textbook of Clinical Research Ethics" (2008) is the most comprehensive reference on the theory and practice of research ethics. Ruth Macklin's "Double Standards in Medical Research in

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Developing Countries" (2004) provides the most direct and most critical analysis of the specific research ethics challenges in developing-country contexts.

On epistemic justice, Miranda Fricker's "Epistemic Injustice: Power and the Ethics of Knowing" (2007) is the foundational text. Kristie Dotson's extension of epistemic injustice theory, published in Hypatia in 2011, provides important elaboration. Gayatri Chakravorty Spivak's "Can the Subaltern Speak?" (1988) provides the postcolonial philosophical background. The application of epistemic justice frameworks to science communication is developed in the emerging literature of the 2020s, including work by Heather Douglas, Philip Kitcher, and scholars at the intersection of feminist philosophy of science and science communication studies.

On international intellectual property and access to medicines, James Boyle's "The Public Domain: Enclosing the Commons of the Mind" (2008) provides the most readable critical analysis of contemporary intellectual property law. Ha-Joon Chang's "Kicking Away the Ladder: Development Strategy in Historical Perspective" (2002) provides the developmental economics perspective on intellectual property and technology transfer. The reports of the South Centre on TRIPS and LDC graduation are the most directly relevant policy documents for Bangladesh's specific situation. Ellen 't Hoen's work on access to medicines, including her contribution to the development of the Doha Declaration, provides essential historical and policy context.

On cross-border investigative journalism, The Global Investigative Journalism Network's resources and case studies provide the most extensive practical documentation. Mark Lee Hunter's "Story-Based Inquiry" (2009), available free from UNESCO, provides the foundational methodological framework. The accounts of the Panama Papers and Pandora Papers investigations, published by the ICIJ and by individual partner organizations, provide rich case study material on the organizational and operational challenges of large-scale cross-border journalism collaborations.

On the future of science journalism education, SciDev.Net's periodic surveys of science journalism training programs around the world provide the best comparative data. The work of the World Federation of Science Journalists on developing country journalism capacity-building, including its assessment reports, provides institutional context. Sharon Dunwoody's foundational research on science journalism education, developed over several decades at the University of Wisconsin, provides the theoretical framework for understanding what science journalism education should achieve.

On the geopolitics of South Asia and its implications for science and journalism, the South Asia Development Update published by the World Bank in October 2025 provides the most comprehensive recent economic analysis. The Diplomat's annual review of South Asian politics and the South Asia at LSE blog's February 2026 assessment provide the most accessible journalism on the political dimensions. Mohammed Nuruzzaman's 2025 article in a peer-reviewed journal on China's expanding footprint in South Asia provides the analytical framework for understanding the regional geopolitical dynamics.

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This concludes Part Seven of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge." Part Eight will examine the specific domains of science journalism practice that pose the greatest challenges and present the greatest opportunities for Bangladeshi science journalism: health and biomedical journalism, environmental journalism, technology journalism, and agricultural science journalism. Each of these domains will be examined in depth, with attention to the specific scientific, legal, ethical, and political challenges that arise in covering it, the investigative opportunities it presents, the relevant theoretical frameworks from the sociology of science and the philosophy of knowledge, and the specific contributions that Bangladeshi science journalists have made and can make to both local and international understanding of the issues it involves.

PART EIGHT: THE DOMAINS OF PRACTICE -- HEALTH, ENVIRONMENT, TECHNOLOGY, AND AGRICULTURE

Prolegomena to Part Eight: Why Domain-Specific Knowledge Is Not Optional

There is a persistent and damaging illusion in the training of science journalists that a sufficiently rigorous grounding in general scientific method, combined with solid investigative skills and a clear philosophical orientation, is essentially sufficient for practice across any domain of science journalism. This illusion is flattering to the generalist and convenient for institutions that cannot afford to train multiple specialists, but it is an illusion nonetheless, and its practical consequences are visible in the journalism it produces. The journalist who approaches a pharmaceutical clinical trial using only general scientific literacy, without understanding the specific methodological conventions of randomized controlled trials, the specific regulatory architecture governing drug development, or the specific political economy of the pharmaceutical industry, will produce journalism that is observably thinner, more susceptible to manipulation by institutional sources, and less useful to readers than the journalism produced by someone who has developed genuine domain expertise. This is not a counsel of despair or a suggestion that the generalist science journalist has nothing to offer: it is an argument that generic competence must be supplemented by domain-specific knowledge, and that the development of that domain knowledge is an ongoing professional obligation rather than an optional specialization.

In Bangladesh, the domain-specific dimensions of science journalism are particularly important because the specific scientific domains that most directly bear on the lives and welfare of the population -- health, environment, agriculture, and technology -- are each embedded in distinctive political, legal, and institutional arrangements that are not reducible to general principles of science journalism practice. The health journalist in Bangladesh who does not understand the specific structure of the Directorate General of Drug Administration (DGDA) and its regulatory relationship with the pharmaceutical industry, who does not know the specific history of drug regulation in the country and the specific controversies that have shaped it, and who cannot read the specific epidemiological literature on Bangladesh's disease burden with

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sufficient comprehension to evaluate its claims, is not equipped to do her job. The same applies, with the appropriate substitutions, to the environmental journalist, the agricultural journalist, and the technology journalist.

Part Eight of this textbook addresses this gap by providing extended treatment of each of the four primary domains of science journalism practice in Bangladesh. Each chapter is organized around the same core questions: What does the scientific landscape of this domain look like in Bangladesh, including the specific institutions, the specific research programs, and the specific tensions and controversies within the scientific community? What is the specific legal and regulatory framework that governs this domain, and what are its historical origins and its current limitations? What are the specific investigative opportunities that this domain presents, and what methods are most useful for pursuing them? What are the specific philosophical and epistemological challenges that arise in reporting on this domain, and how do the theoretical frameworks developed in earlier parts of this textbook apply to these specific challenges? And what does genuinely excellent science journalism in this domain look like, both in terms of the models already established and in terms of the vision of what this journalism should aspire to become?

The answers to these questions draw extensively on the developments of 2024, 2025, and 2026, a period that has been remarkable for Bangladeshi journalism in general and for science journalism specifically. The political transition that followed the fall of the Hasina government in August 2024 opened new spaces for reporting while simultaneously creating new threats and uncertainties. The press freedom situation documented by the International Federation of Journalists in February 2026, which noted at least seven verified journalist murders since July 2024, the freezing of the bank accounts of at least ten journalists by the Bangladesh Financial Intelligence Unit, a large-scale data breach on January 31, 2026 that exposed the private National ID details, home addresses, and signatures of an estimated fourteen thousand journalists, and the documentation by a December 2025 Digitally Right study that 89 percent of Bangladesh's journalists feared physical assault during pre-election reporting, all describe an environment in which the courage required to do serious science journalism has not diminished and has in many respects intensified.

The student who reads Part Eight in this context should read it not as a technical manual but as a moral and intellectual argument: an argument that these domains of practice are important enough, and the risks of inadequate journalism in them severe enough for real human lives, that the science journalist has an obligation to develop the deepest and most rigorous competence she can achieve, and to deploy it in the service of the democratic accountability function that her profession exists to provide.

Chapter Seventy: Health and Biomedical Journalism in Bangladesh

70.1 The Epidemiological Landscape: What Bangladesh's Disease Burden Tells the Journalist

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The disease burden of Bangladesh in 2024 and 2025 presents a complex picture that the health journalist must understand at a granular level before she can begin to evaluate whether the reporting of her own outlet or of the broader media ecosystem is doing justice to it. The Global Burden of Disease data for Bangladesh documents a country in the middle of an epidemiological transition, experiencing simultaneously the residual burden of communicable, maternal, neonatal, and nutritional conditions that characterized the pre-modern disease profile, and the growing burden of non-communicable diseases including ischemic heart disease, stroke, chronic obstructive pulmonary disease, and various cancers that have become increasingly dominant as Bangladesh's population ages and urbanizes.

The communicable disease picture includes ongoing public health challenges of first-order importance. Dengue fever, which was once considered a primarily urban and seasonal phenomenon, has expanded significantly in recent years both geographically and temporally. The 2024 dengue season in Bangladesh was one of the most severe on record, with official case counts in the hundreds of thousands and mortality figures that, even at official levels, indicated a public health emergency that the media coverage of the period did not always adequately reflect. The scientific literature on dengue in Bangladesh, including a 2025 analysis of the June 2024 flooding in Sylhet division and its relationship to vector ecology, illustrates the specific interplay between climate-driven hydrological change and infectious disease burden that makes dengue not merely a health story but a science-environment-health story requiring the kind of interdisciplinary reporting competence that few individual journalists possess.

Tuberculosis, which remains a significant public health challenge in Bangladesh despite decades of control programs, has returned to journalistic attention with the emergence and spread of drug-resistant strains that require more expensive, more toxic, and less reliable treatment than drug-sensitive TB. The specific epidemiology of drug-resistant TB in Bangladesh, the specific failures of the health system that have allowed drug-resistant strains to develop and spread, and the specific research programs aimed at developing better diagnostics and treatments are all stories that deserve investigation by health journalists with the scientific literacy to engage with the technical dimensions of drug resistance and with the investigative capacity to examine the institutional failures that have allowed the problem to develop.

The non-communicable disease burden, which now accounts for the majority of mortality in Bangladesh, receives substantially less journalistic attention than its epidemiological importance would suggest. The coverage of cardiovascular disease, diabetes, cancer, and chronic respiratory disease in Bangladeshi media is predominantly episodic and often clinically oriented, focused on individual treatments and medical advances rather than on the social determinants, the environmental exposures, and the food system characteristics that drive the epidemic of non-communicable disease. This gap in coverage is not merely a professional failure: it is a political failure, because the social and environmental drivers of non-communicable disease are precisely the areas where investigative journalism, capable of documenting corporate practices, regulatory failures, and policy choices, could make the greatest contribution to democratic accountability.

70.2 The Pharmaceutical Industry in Bangladesh: An Investigative Priority

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Bangladesh's pharmaceutical sector has a genuinely distinctive history that the health journalist must understand because it shapes both the specific regulatory environment in which drug safety and efficacy claims are evaluated and the specific political economy of pharmaceutical reporting. Bangladesh's pharmaceutical industry, which developed rapidly following the promulgation of the National Drug Policy of 1982, is one of the few sectors in which the country has developed genuine manufacturing and export capacity. The 1982 drug policy, which was developed with the assistance of the WHO and which restricted the number of permitted drug formulations, established a regulatory framework that was designed to prioritize essential medicines over branded luxury products and to promote the development of a local generic pharmaceutical manufacturing sector.

The political economy of drug regulation in Bangladesh is characterized by a complex and shifting relationship between the Directorate General of Drug Administration, the local pharmaceutical manufacturers, the multi-national pharmaceutical companies operating in the country, and the international regulatory bodies including the WHO and the regulators of countries to which Bangladeshi pharmaceuticals are exported. The specific tension between the interests of local manufacturers, who benefit from a regulatory environment that favors generic production and that has historically provided significant protection from competition by multinational brands, and the interests of the population in having access to drugs that are both effective and of acceptable quality, creates a set of investigative questions about regulatory capture, enforcement of drug quality standards, and the specific practices of individual companies that are persistently relevant and persistently underreported.

The predatory journal problem discussed in Part Seven has a specific and acute manifestation in the pharmaceutical context in Bangladesh. The Bangladesh Journal of Pharmacology's 2025 warning about a fraudulent website falsely claiming to represent it illustrates the specific vulnerability of Bangladeshi pharmaceutical research to practices that can both undermine the credibility of legitimate Bangladeshi pharmaceutical science and provide a mechanism for the laundering of poorly conducted or fabricated research on pharmaceutical products. The health journalist covering pharmaceutical research in Bangladesh must be equipped to identify and expose this kind of research integrity fraud, which requires both scientific literacy about what good pharmaceutical research looks like and investigative capacity to trace the institutional connections between specific publications, specific companies, and specific regulatory applications.

The clinical trials landscape in Bangladesh is another area of significant investigative potential that has been inadequately explored by Bangladeshi health journalism. Bangladesh is an increasingly attractive site for multinational pharmaceutical companies conducting clinical trials of new drugs and vaccines, partly because of the large and heterogeneous population, partly because of the availability of a significant number of patients with specific disease conditions at a relatively low cost of per-patient trial enrollment, and partly because of a regulatory environment that, despite the formal existence of an ethics review infrastructure, has not always provided adequate protection against the exploitation of trial participants. The specific provisions of the Declaration of Helsinki, discussed in Part Seven, establish clear requirements for informed consent and ethical research design that are not always fully implemented in the specific

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conditions of Bangladeshi clinical research, and the health journalist who investigates specific clinical trials can make a significant contribution to the accountability infrastructure around pharmaceutical research.

The COVID-19 pandemic, which Bangladesh navigated from 2020 through 2022, produced a specific body of health journalism experience that the student of Bangladeshi health journalism should examine critically. The coverage of the pandemic by Bangladeshi media illustrated both the strengths and the weaknesses of the existing health journalism infrastructure: the strengths included remarkable energy and dedication from individual journalists who covered the pandemic under difficult conditions and at significant personal risk, and the capacity of digital media to provide rapid information updates that genuinely served the public during the acute phases of the outbreak. The weaknesses included inadequate scientific literacy about the specific epidemiological and virological science of COVID-19, which produced numerous instances of misinformation and misreporting; vulnerability to manipulation by institutional sources including government health agencies that had interests in managing the public narrative about the severity of the outbreak and the adequacy of the government response; and a failure to maintain adequate critical distance from both the scientific authority of international bodies like the WHO and the political authority of the government.

The specific controversy over COVID-19 excess mortality estimates in Bangladesh is worth examining as a case study in the epistemological and political challenges of health journalism. Official Bangladesh government figures for COVID-19 deaths were substantially lower than the excess mortality estimates produced by independent researchers using statistical modeling of all-cause mortality. The gap between official figures and excess mortality estimates raised important questions about the reliability of Bangladesh's disease surveillance and mortality registration systems, about the institutional incentives that might lead to undercounting of COVID-19 deaths, and about how health journalists should handle situations in which official government data appears inconsistent with independent scientific estimates. The appropriate journalistic response to this situation, which is to report both figures, to explain the methodological differences between them, to investigate the reasons for the discrepancy, and to advocate for more transparent and reliable mortality data systems, required a level of statistical sophistication and investigative determination that was not universally present in the reporting on this question.

70.3 The Mental Health Journalism Gap: An Underreported Crisis

Mental health represents perhaps the most significant gap in Bangladeshi health journalism, in a context where the gap between epidemiological importance and journalistic attention is not merely quantitative but qualitative, reflecting deep stigma, institutional inadequacy, and professional discomfort with a set of conditions that are simultaneously highly prevalent and almost entirely invisible in the mainstream media.

The prevalence of mental health conditions in Bangladesh, as estimated by the Global Burden of Disease and by the limited national surveys conducted by Bangladeshi researchers, suggests that depression, anxiety disorders, and other common mental health conditions affect a substantial proportion of the population, with specific concentrations of elevated risk in groups including

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garment workers, climate-displaced populations, survivors of gender-based violence, and young people facing economic insecurity and social pressure. The specific epidemiology of mental health in Bangladesh is complicated by the challenges of cross-cultural validity of mental health diagnostic categories developed in wealthy Western countries, by the specific cultural and religious frameworks within which Bangladeshi people understand and manage psychological distress, and by the near-total absence of adequate mental health services that would be needed to identify, treat, and monitor the population.

The journalism of mental health in Bangladesh requires a specific set of professional competencies that go beyond the general requirements of health journalism. The mental health journalist must be familiar with the specific debates about the cultural validity of psychiatric diagnosis, with the specific evidence on the effectiveness of different treatment modalities in low-resource settings, with the specific provisions of the Persons with Disabilities Rights and Protection Act of 2013 as they apply to people with mental health conditions, and with the specific ethical requirements for reporting on mental health, including the specific risk of harm from certain kinds of reportage, particularly around suicide, where the extensive international evidence on suicide contagion and the responsible reporting guidelines developed by organizations including the WHO and the International Association for Suicide Prevention provide the professional standard against which Bangladeshi mental health reporting should be evaluated.

The political economy of mental health in Bangladesh is shaped by the near-total neglect of mental health in the country's health budget, which has historically allocated less than one percent of the total health budget to mental health services, a figure that is among the lowest in the world and that reflects a political and cultural failure to take mental health seriously as a public health priority. The specific case for increased mental health investment, and the specific evidence that mental health conditions are responsible for substantial economic losses through reduced productivity and increased disability, represents a story that health journalism can tell and that has genuine potential to shift public and political understanding of the issue. The investigative dimension of this story includes examination of the specific institutional arrangements that have perpetuated mental health neglect, including the allocation of the mental health budget, the training and deployment of mental health professionals, and the legal framework that has in some cases facilitated the detention and mistreatment of people with mental health conditions rather than their treatment and inclusion.

70.4 The Legal Architecture of Health Journalism in Bangladesh

The legal framework governing health journalism in Bangladesh is a complex and often contradictory terrain that the health journalist must navigate with both legal literacy and strategic awareness. The fundamental right to health is not explicitly guaranteed in the Bangladesh Constitution, though it is recognized as a dimension of the right to life in a series of Supreme Court judgments that have progressively expanded the constitutional dimensions of health rights. The specific statutes governing health-related journalism include the Food Safety Act of 2013, which regulates the production, distribution, and marketing of food products and creates specific legal mechanisms for addressing food safety violations that are directly relevant to investigative

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reporting on food safety scandals; the Drugs (Control) Ordinance of 1982, which remains the foundational legislation governing the regulation of pharmaceutical products; and the Tobacco Control Act of 2005 and its amendments, which regulate tobacco marketing and provide the legal basis for reporting on tobacco industry practices.

The most significant legal constraint on health journalism in Bangladesh is not health-specific legislation but the broader legislation governing digital speech and information, including the Cyber Security Act and its predecessor the Digital Security Act, which has been used to prosecute journalists who reported critically on health issues affecting powerful interests. The specific intersection of health journalism and digital speech law is illustrated by cases in which journalists were prosecuted under the Digital Security Act for social media posts that called into question official health statistics, for reporting that embarrassed health authorities by documenting specific institutional failures, and for coverage of COVID-19 that diverged from the government's preferred narrative. These cases, documented by Reporters Without Borders and other press freedom organizations, establish a specific chilling effect on health journalism that the student must understand as part of the structural context within which health journalism in Bangladesh operates.

The right to information dimension of health journalism law deserves specific attention. The RTI Act of 2009, which the Freedom House country report for 2025 noted has been unevenly implemented but has been successfully used by journalists and civil society activists in some cases, provides a legal mechanism for obtaining health-related government information that can be invaluable for investigative reporting. The specific categories of health information that should in principle be accessible under the RTI Act include regulatory decisions of the DGDA on drug approvals and suspensions, inspection reports of pharmaceutical manufacturing facilities, reports of adverse drug reactions submitted to the national pharmacovigilance system, and data on the health status and health service utilization of specific populations. The practical experience of health journalists who have used the RTI Act to obtain health information is that the formal right to information exists in law but faces substantial institutional resistance in practice, and that the effective use of the RTI Act requires both legal knowledge and institutional persistence that is not always supported by the resource constraints under which Bangladeshi journalists work.

70.5 The Pharmaceutical Advertising Problem: A Case Study in Scientific Integrity

The relationship between pharmaceutical advertising and health journalism represents one of the most institutionally embedded conflicts of interest in Bangladeshi journalism, and its examination provides a case study in the way in which the commercial structure of media intersects with the scientific integrity requirements of health reporting. Pharmaceutical companies are among the most significant advertisers in Bangladeshi print and digital media, and the financial dependence of media organizations on pharmaceutical advertising revenue creates specific and well-documented pressures on the independence of health reporting.

The specific manifestations of pharmaceutical advertising influence on health journalism in Bangladesh include the editorial preference for stories that present pharmaceutical interventions

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favorably over stories that present non-pharmaceutical approaches to health, the reluctance to report on drug safety concerns or adverse effects that might reflect poorly on an advertiser's product, the practice of publishing or excerpting pharmaceutical company press releases as editorial content without adequate critical evaluation, and the provision of favorable coverage to pharmaceutical companies in exchange for advertising contracts or other commercial arrangements. Each of these practices represents a failure of editorial independence and a violation of the public trust that journalism invokes in claiming the authority to serve as a reliable source of health information.

The investigative reporter who wants to document pharmaceutical advertising influence on health coverage faces specific methodological challenges. The most direct evidence of the relationship between advertising and coverage is found in the correlation between advertising spending and editorial coverage, but establishing this correlation requires systematic content analysis of coverage combined with access to advertising financial data that media organizations typically treat as confidential. Approaches to this investigation might include analysis of publicly available financial information about pharmaceutical companies and their advertising spending, comparison of coverage patterns between media organizations with different levels of pharmaceutical advertising dependence, and interviews with current and former journalists and editors willing to describe the specific pressures they have faced.

The international body of research on pharmaceutical industry influence on medical education, medical publishing, and clinical practice provides the theoretical and empirical context within which the specific Bangladeshi case should be understood. The work of John Abramson, whose "Overdosed America" (2004) and subsequent research documented the systematic distortion of medical evidence by pharmaceutical industry interests, the work of Marcia Angell, whose "The Truth About the Drug Companies" (2004) provided a comprehensive critical analysis of the pharmaceutical industry's relationship with medical research, and the work of Ben Goldacre, whose "Bad Pharma" (2012) documented specific mechanisms through which pharmaceutical companies manipulate the evidence base for their products, all provide frameworks and precedents for the kind of investigative journalism on pharmaceutical industry practices that Bangladesh's health journalism should aspire to conduct.

Chapter Seventy-One: Environmental Journalism in Bangladesh

71.1 Why Environmental Journalism Is Different: The Scale of the Stakes

Environmental journalism in Bangladesh operates at a scale of human consequence that has few parallels anywhere in the world. The country occupies the delta of three of Asia's largest river systems, a geographic position that has historically been both the source of its extraordinary agricultural fertility and the source of its extraordinary vulnerability to floods, cyclones, and the hydrological consequences of climate change. The specific concentration of more than 170 million people in a low-lying delta nation facing some of the most severe consequences of anthropogenic climate change, compounded by industrial pollution, deforestation, and the

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environmental degradation associated with rapid urbanization and export-oriented industrialization, means that environmental journalism in Bangladesh is journalism about the conditions of human survival at a scale and with an urgency that demands journalistic ambition commensurate with the stakes.

A content analysis study of six regional newspapers of Bangladesh, published in late 2025 in the International Journal of Research in Information Systems and Analysis, examined coverage during a disaster-free period in March 2025 and found that regional newspapers covered environmental problems in 44.62 percent of their environmental stories, public protests in 9.7 percent, government drives and actions in 15.52 percent, and awareness programs in 25.22 percent. The study's most significant finding was that despite their potential role in raising community awareness, regional newspapers provided largely event-based, elite-centered reporting with little investigative or research-based depth, that editorials and stories were often influenced by political and administrative interests, and that contributions from experts and research institutions were almost absent. Visual presentation was weak, with no use of infographics or data visualization, and only a limited number of byline reports.

This finding, which is consistent with the earlier body of research on environmental journalism in Bangladesh reviewed in the Journalism Studies article by Ahchike and Uddin and in the analysis published in the International Journal of Scientific Research and Analysis, documents a systematic failure of environmental journalism to fulfill the investigative and analytical functions that Bangladesh's environmental situation demands. The gap between the scientific urgency of Bangladesh's environmental challenges and the superficiality of much environmental journalism is not merely an aesthetic failure: it is a failure with direct consequences for the public's capacity to understand the environmental threats they face, to evaluate the adequacy of government and corporate responses to those threats, and to participate meaningfully in the political decisions about environmental policy that will shape their futures.

71.2 The Rivers of Bangladesh: An Investigative Paradigm

The rivers of Bangladesh represent perhaps the most important and most systematically underreported environmental story in the country, and their examination provides a paradigm case for thinking about how environmental journalism in Bangladesh should be conducted. Bangladesh has more than seven hundred rivers, and the river system is the fundamental organizing structure of the country's physical geography, its ecological systems, its agricultural economy, and its cultural identity. The degradation of this river system, through a combination of pollution from industrial and domestic sources, upstream dams and diversions that reduce water flows, riverbed dredging and sand extraction, and encroachment by powerful interests onto river banks and floodplains, represents an environmental crisis of first-order importance that has been documented by scientific researchers but that has been inadequately covered by the mainstream media.

The specific legal framework governing river protection in Bangladesh is extensive and, on paper, relatively robust. The Bangladesh Environmental Conservation Act of 1995 and the Environment Court Act of 2000 provide the foundational legislative framework. The Rivers

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Protection Commission, established in 2019, was given a specific mandate to protect rivers from encroachment and pollution. The Supreme Court of Bangladesh has issued a series of landmark environmental judgments that have recognized the rights of rivers as legal entities and have ordered specific protective measures. Yet the gap between this legal framework and its implementation is one of the most striking features of Bangladesh's environmental governance, and this gap is itself a major investigative story.

The specific history of the Save Our Surge campaign of 2009, examined in the Journalism Studies article by Uddin, which used the concept of "active social agency" from Vincent Mosco to analyze environmental journalism's engagement with that campaign, provides a historical precedent for the kind of engaged environmental journalism that can genuinely influence policy. The campaign, which aimed to save the rivers around Dhaka from pollution and encroachment, and which was covered by environmental journalists in ways that went beyond conventional journalistic neutrality to embrace active participation in the campaign's advocacy, produced measurable effects on the political and regulatory response to river pollution. This experience illustrates both the potential for environmental journalism to function as a democratic force for environmental protection and the specific epistemological and ethical tensions that arise when journalists move from the witness and critic roles toward something closer to advocacy.

The tension between journalistic independence and environmental advocacy is one of the most persistently debated questions in environmental journalism globally, and it takes a specific form in the Bangladeshi context. The argument for engaged advocacy journalism in the environmental context rests on the claim that the scientific urgency of the environmental crisis, particularly in a country as vulnerable as Bangladesh, morally requires journalists to move beyond conventional neutrality and to use their platforms to promote the environmental protection that the evidence demands. The argument against this position rests on the claim that journalistic independence is not merely an aesthetic preference but a precondition for the epistemic credibility on which journalism's democratic function depends, and that journalism that is perceived as advocacy loses the credibility needed to hold institutions accountable. This debate does not have a simple resolution, and the environmental journalist in Bangladesh must develop her own carefully reasoned position on it, with full awareness of the specific institutional and political context in which she works.

71.3 Industrial Pollution and the Investigative Challenge: Garments, Tanneries, Shrimp

The specific pattern of industrial development in Bangladesh has produced three industries that are simultaneously major contributors to the country's economic development and major sources of environmental contamination: the garment and textile industry, the leather tanning industry, and the shrimp aquaculture industry. Each of these industries represents a significant investigative opportunity for environmental journalists, and each presents a specific combination of scientific, legal, political, and institutional challenges that require domain-specific knowledge to navigate effectively.

The garment and textile industry, which is the dominant driver of Bangladesh's export economy and which employs approximately four million workers, primarily women, is responsible for

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significant water pollution through the discharge of dyes, chemicals, and untreated effluent into rivers and other water bodies, significant air pollution through the operation of dyeing and finishing operations, and significant soil contamination through improper disposal of solid waste. The specific environmental impacts of the garment industry have been documented in research by a number of Bangladeshi and international scientists, including studies of dye contamination in rivers near major textile processing areas, studies of toxic chemical concentrations in groundwater near industrial zones, and studies of the occupational health consequences of chemical exposure for garment workers.

The investigative challenge of reporting on garment industry pollution is substantially shaped by the economic and political power of the industry's stakeholders. The garment industry is the foundation of Bangladesh's foreign exchange earnings, and its owners and trade associations have substantial political influence that they can deploy to resist critical reporting. The international buyers and brands that source from Bangladesh have increasingly established environmental and social compliance requirements as part of their supplier standards, and these requirements create some leverage for advocacy and enforcement, but the implementation of these standards is inconsistent and the monitoring of compliance is inadequate. The science journalist who investigates specific cases of environmental violation in the garment industry is not just investigating an individual company: she is investigating a system in which powerful economic interests, inadequate regulatory capacity, and international supply chain dynamics interact in ways that systematically undermine environmental accountability.

The leather tanning industry, concentrated primarily in the Hazaribagh area of Dhaka and in the newer Savar Leather Industrial City, is a more concentrated environmental disaster that has been documented extensively by researchers and by some investigative journalists but that continues to represent a massive public health and environmental problem. The tanneries in Hazaribagh were documented for decades as among the worst industrial polluters in Bangladesh, discharging untreated effluent containing heavy metals including chromium directly into the Buriganga river and into the soil and groundwater of the surrounding neighborhood. The government's decision to relocate tanneries to the Savar Industrial City, while addressing some of the most acute problems of the Hazaribagh site, has created new environmental problems at the relocation site and has not fully addressed the contamination legacy of Hazaribagh itself.

The Savar leather industrial city, which was designed with a centralized effluent treatment plant (CETP) intended to treat the combined effluent of the relocated tanneries before discharge, has been the subject of significant controversy about whether the CETP has been properly operated and maintained, and whether the environmental compliance of the individual tanneries with pre-treatment requirements before discharge to the CETP is adequate. The science journalist who wants to investigate this question needs to understand the specific chemistry of tannery effluent and the specific treatment processes that are required to address it, to obtain and analyze the effluent monitoring data that is in principle collected by the Bangladesh Environmental Conservation Authority (BECA), and to understand the specific regulatory framework governing the tannery sector and the specific enforcement record of the relevant agencies.

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The shrimp aquaculture industry, which is concentrated primarily in the coastal districts of Satkhira, Khulna, and Bagerhat in the southwest of Bangladesh and which is a significant source of export earnings, represents a third major environmental story that has received some journalistic attention but that remains significantly underreported in terms of the full range of its environmental consequences. The conversion of agricultural land and mangrove areas to shrimp ponds has produced significant ecological transformation in the coastal zone, affecting the ecology of the Sundarbans, reducing the biodiversity of coastal ecosystems, and creating conditions of soil salinization that reduce the long-term agricultural productivity of converted areas.

The specific political economy of the shrimp industry, which involves a combination of powerful domestic commercial interests, international export market demands with specific product quality and environmental requirements, and communities of small-scale shrimp farmers whose livelihoods depend on the industry, creates a complex and often contradictory regulatory environment that is rich in investigative potential. The specific environmental impacts of shrimp aquaculture, including the use of antibiotics and other chemical inputs that create risks of antibiotic-resistant bacteria in aquatic environments and in the food supply, are directly relevant to both environmental journalism and health journalism, and the story of shrimp aquaculture in Bangladesh is an excellent example of the kind of interdisciplinary investigative reporting that the most important environmental stories demand.

71.4 The Sundarbans: A Story of Extraordinary Scientific and Political Complexity

The Sundarbans, the largest contiguous mangrove forest in the world and a UNESCO World Heritage Site, represents one of the most scientifically complex and politically charged environmental stories in Bangladesh, and its reporting demands from the environmental journalist a combination of ecological, economic, legal, and political knowledge that is as demanding as the combination required for any other story in the environmental journalism domain.

The scientific understanding of the Sundarbans has developed significantly over the past decade, driven by a combination of satellite remote sensing analysis, field ecological research, and the specific research programs of the Bangladesh Forest Department, the Khulna University Institute of Environmental Sciences and Geography, and various international research collaborations. The CMIP6 climate model analysis published in Scientific Reports in 2025, which examined historical climate data from 1901 to 2020 and projected future temperature and precipitation patterns in Bangladesh, provided updated projections for the specific climate stressors facing the Sundarbans, including sea level rise, increased cyclone intensity, and changes in freshwater inflow from the Ganges system. These scientific findings, which are complex, probabilistic, and embedded in the specific technical conventions of climate science, represent the kind of material that the environmental journalist must be equipped to interpret accurately and to communicate effectively to non-specialist audiences.

The political economy of the Sundarbans is shaped by multiple competing interests that create a complex and often contested regulatory environment. The Forest Department has jurisdiction

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over the reserved forest areas of the Sundarbans, with a mandate to protect the forest's ecological integrity and biodiversity. The fishing communities that have traditionally depended on the Sundarbans for their livelihoods, and that continue to do so in increasing numbers as the fishing grounds of the wider Bay of Bengal are depleted, have interests in access to Sundarbans resources that are in tension with the Forest Department's conservation mandate. The shipping industry, which uses the river channels through the Sundarbans as a major transportation route for goods including fuel oil, has interests that have repeatedly come into conflict with the environmental protection of the forest, illustrated dramatically by the Shela River oil spill of 2014 and the ongoing controversy over oil tanker traffic through the Sundarbans.

The specific controversy over the Rampal coal-fired power plant, which was proposed for construction adjacent to the Sundarbans in the late 2000s and which became the focus of a significant environmental movement that generated both domestic and international attention, illustrates the intersection of energy policy, environmental protection, and international scientific authority that makes Sundarbans reporting an exemplary case of the complexities this textbook has argued throughout must be central to environmental science journalism. The scientific debate over the Rampal power plant's likely impacts on the Sundarbans involved genuine disagreements among experts about the nature and magnitude of the environmental risks, the adequacy of the proposed mitigation measures, and the appropriate weighting of environmental risks against the energy security and economic development benefits of new power generation capacity. The journalistic coverage of this debate, which ranged from uncritical reproduction of the government's position that the plant would be environmentally safe, to uncritical reproduction of the environmental movement's position that it would be catastrophic, to genuinely investigative and analytically sophisticated reporting that attempted to evaluate the scientific evidence and the institutional claims on their merits, illustrated the full range of competences that environmental journalism requires.

71.5 Air Quality Journalism and the Dhaka Pollution Crisis

Dhaka's air quality crisis is one of the most directly health-relevant environmental stories in Bangladesh, and it has received increasing journalistic attention in recent years, though the depth and rigor of that coverage remains uneven. Dhaka consistently ranks among the cities with the worst air quality in the world by the international air quality monitoring databases, and the specific health consequences of chronic exposure to the fine particulate matter (PM2.5) and other air pollutants that characterize Dhaka's atmosphere are both scientifically well-documented and genuinely severe, including elevated rates of respiratory disease, cardiovascular disease, and premature mortality.

The environmental journalist covering Dhaka's air quality crisis has access to a growing body of scientific data, including the monitoring data from the fixed monitoring stations of the Department of Environment, the data from low-cost air quality sensors that have been deployed by researchers at several Bangladeshi universities and research institutions, and the analysis of satellite remote sensing data that provides a geographically comprehensive picture of air quality across the country. This data, combined with the epidemiological research on the health impacts of air pollution and the modeling studies that attribute specific fractions of air pollution to

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different source categories including brick kilns, vehicle emissions, and industrial sources, provides a rich empirical foundation for investigative reporting.

The specific investigative opportunities in air quality journalism in Bangladesh include investigation of the enforcement record of the Department of Environment in regulating the emission sources that are the primary drivers of Dhaka's air pollution, including the brick kilns that operate in violation of mandated emission control standards; investigation of the vehicle emission testing system, which has been documented as subject to widespread corruption that allows heavily polluting vehicles to obtain roadworthiness certificates; and investigation of the industrial pollution control infrastructure, including the extent to which industrial facilities in the Dhaka metropolitan area have installed and operate effective emission control equipment as required by the Environment Conservation Rules. Each of these investigations requires specific scientific knowledge about emission sources and their control, specific legal knowledge about the regulatory requirements and the enforcement mechanisms, and specific investigative capacity to obtain and analyze the relevant data.

Chapter Seventy-Two: Technology Journalism in Bangladesh

72.1 The Technology Landscape: Promise, Politics, and the Digital Divide

Technology journalism in Bangladesh operates in a distinctive context that combines extraordinary recent growth in digital infrastructure and technology adoption with significant structural inequalities in access, with a political environment in which digital technology has been simultaneously a tool of democratic communication and a tool of political surveillance and control, and with a specific economic and regulatory landscape that shapes both what technology journalists can report and the consequences of what they report.

The story of Bangladesh's digital transformation over the past fifteen years is genuinely remarkable and genuinely complex. The country's mobile telephone penetration, which was negligible in 2000, has reached levels that place Bangladesh among the most connected populations in the developing world by the mid-2020s. The specific expansion of mobile broadband access, driven by the growth of the 4G network and the initial rollout of 5G services in major urban centers, has created conditions for a digital economy and digital public sphere that would have been unimaginable to the observers of Bangladesh's communications landscape in the early 2000s. The growth of the garment industry's digital supply chain integration, the development of a significant information technology services export sector, the rapid expansion of mobile financial services including bKash and its competitors, and the emerging use of digital technologies in agriculture, health, and disaster management all represent genuine technology-driven social and economic transformations that deserve serious journalistic investigation.

At the same time, the 2025 World Bank South Asia Development Update, which described South Asia as the least open region in the world to international trade and finance and which noted that moderately educated, young workers, especially in business services and information

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technology, were vulnerable to AI-driven displacement even as AI created strong demand for new skills, provides an important frame for understanding the specific tensions and vulnerabilities in Bangladesh's digital technology landscape. The World Bank's observation that since the release of ChatGPT, job listings have fallen by approximately 20 percent in jobs most exposed to AI, while AI-related jobs command a wage premium of nearly 30 percent relative to other professional roles, describes a labor market transformation that is directly relevant to the technology journalism beat in Bangladesh.

The political economy of technology in Bangladesh is dominated by the specific intersection of the digital communications sector with the state, an intersection that has been characterized throughout the country's history by the use of telecommunications infrastructure for political surveillance and control as well as for economic development and democratic communication. The documentation by the IFJ of a large-scale data breach on January 31, 2026 within the Election Commission's mandatory online accreditation system that leaked the private National ID details, home addresses, and signatures of an estimated 14,000 journalists illustrates with particular clarity the way in which the digital infrastructure of the Bangladeshi state creates specific risks for the journalists who are required to interact with it. The technology journalist who covers cybersecurity, data privacy, and the governance of digital infrastructure in Bangladesh is not covering a narrow technical specialty: she is covering a central dimension of the political economy of press freedom and democratic accountability.

72.2 The Regulatory Architecture of Bangladesh's Technology Sector

The legal and regulatory framework governing digital technology in Bangladesh has been extensively reformed in the period between 2024 and 2026, and the technology journalist must understand both the history of this reform and its current state with the kind of analytical depth that allows her to evaluate claims about the adequacy and independence of the regulatory framework rather than simply describing its formal structure.

The Bangladesh Telecommunication Regulatory Commission (BTRC), established under the Bangladesh Telecommunication Regulation Act of 2001 and subsequently amended, is the primary regulatory authority for the telecommunications and digital communications sectors. The BTRC has been the subject of significant criticism, including from international telecommunications regulators and civil society organizations, for its patterns of blocking online content, its exercise of powers to order internet shutdowns during periods of political unrest, and its relationships with politically connected telecommunications operators that raise questions about the independence of its regulatory decisions.

The specific history of internet shutdowns in Bangladesh is directly relevant to technology journalism because each shutdown has been both a political event and a technology story with specific implications for the digital economy, for public health information systems, and for the democratic function of digital communications. The shutdown of mobile internet services during the student protests of July and August 2024, which preceded the fall of the Hasina government, is the most recent and most dramatic example of a pattern that has included multiple previous shutdowns associated with political unrest, examination periods, and specific events where the

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government has determined that free flow of information was contrary to its interests. The technology journalist who covers internet shutdowns must be equipped to report both the immediate facts of the shutdown and the broader context of the legal authority under which it is ordered, the international human rights framework under which it may be challenged, and the specific economic and social consequences it produces.

The Personal Data Protection Ordinance, which was among the legislative reforms of the 2025 period discussed in Part Six of this textbook, creates a new legal framework governing the collection, processing, and storage of personal data in Bangladesh. The technology journalist covering data protection in Bangladesh must understand both the specific provisions of this ordinance and its relationship to the international frameworks for data protection, particularly the European Union's General Data Protection Regulation (GDPR), which has become the de facto international standard for data protection and which influences the data practices of the multinational technology companies that operate in Bangladesh. The gap between the formal requirements of the Personal Data Protection Ordinance and its practical implementation, and the specific cases in which data protection failures have had concrete consequences for Bangladeshi citizens, are the investigative dimensions of this story.

72.3 Artificial Intelligence in Bangladesh: Opportunities, Risks, and the Journalism Imperative

The rapid advance of artificial intelligence technologies, and their specific implications for Bangladesh's economy, society, and governance, represents one of the most important and most underreported technology stories in the country in 2024, 2025, and 2026. The mainstream Bangladeshi media has covered AI primarily through the lens of excitement about technological possibility and concern about job displacement, without adequately investigating the specific ways in which AI systems are already being deployed in Bangladesh, the specific regulatory and governance gaps that make those deployments potentially risky, or the specific opportunities for AI to address some of Bangladesh's most pressing developmental challenges.

The deployment of AI in Bangladesh's financial sector, particularly through the mobile financial services platforms and the banking sector's credit scoring and fraud detection systems, represents a direct intersection of technology with the financial lives of millions of Bangladeshis. The use of AI-based credit scoring in the expanding mobile credit and microfinance sector raises specific questions about algorithmic fairness, about whether the data used to train credit scoring models reflects or amplifies existing patterns of discrimination against women, rural populations, or ethnic minorities, and about the regulatory oversight of AI-based financial decisions. These are precisely the questions that a sophisticated technology journalist should be investigating, and they require a combination of technical understanding of how machine learning-based credit scoring works and investigative capacity to obtain information about the specific models being used and the data on which they are trained.

The use of facial recognition technology by Bangladeshi law enforcement and border control agencies, which has been expanding in the period from 2024 to 2026, represents another area of significant concern that deserves investigative attention. The international civil liberties literature

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on facial recognition, which documents the specific risks of misidentification that are disproportionately severe for people with darker skin tones, the specific risks of mass surveillance that are created by the deployment of facial recognition in public spaces, and the specific legal and human rights frameworks that have been developed in various jurisdictions to govern the use of this technology, provides the context within which the Bangladeshi deployment should be evaluated. The technology journalist who covers facial recognition in Bangladesh must be equipped to ask not just whether the technology is being used but under what legal authority, with what oversight, with what accuracy rates in Bangladeshi conditions, and with what consequences for the people who are misidentified or who are placed under surveillance through its use.

The broader question of AI governance in Bangladesh represents a genuine legislative and regulatory gap that the technology journalist can both report on and, through that reporting, contribute to filling. The international debate about AI governance, which has produced the European Union's AI Act (which came into force in 2024), the United States' executive orders on AI safety, and extensive discussion at the UN level including the adoption of the first UN resolution on safe, secure, and trustworthy AI in March 2024, provides the comparative international context for an assessment of Bangladesh's regulatory readiness for AI. Bangladesh has neither a comprehensive AI strategy nor an AI-specific regulatory framework as of early 2026, and the specific institutional question of which government body should have primary responsibility for AI governance, and what that governance should require, is an open question with significant implications for the development of AI in Bangladesh.

72.4 Disinformation Technology and the Science of Manipulation

One of the most important technology stories of the 2024 to 2026 period in Bangladesh, and one that connects directly to the broader concerns of this textbook about the epistemological foundations of science journalism, is the story of AI-generated disinformation and its specific manifestations in Bangladesh's political and information environment. The analysis published in Global Voices in April 2026 on AI-generated content during the Bangladesh election period, and the Business Standard's January 2026 investigation into AI-generated content ahead of the election, document a specific and highly consequential deployment of AI technology for the manipulation of public discourse in Bangladesh.

The technology journalist covering AI-generated disinformation in Bangladesh must understand both the specific technical capabilities of the AI systems being used to generate manipulative content and the specific social and political conditions that make Bangladeshi audiences particularly vulnerable to specific kinds of manipulation. The technical capabilities include not just the generation of false text but the synthesis of realistic video content (deepfakes), the generation of synthetic audio, and the use of AI tools to scale the distribution of manipulative content through social media networks in ways that make it difficult to distinguish from organic information spread.

The social and political conditions include the specific vulnerabilities created by the political polarization of Bangladeshi society following the events of August 2024, the specific

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vulnerabilities of a rapidly expanding digital audience that has gained access to online information without the extended experience of navigating online information environments that populations in countries with longer internet histories have accumulated, and the specific institutional vulnerabilities of a fact-checking ecosystem that, as Part Six documented, remains inadequately resourced and institutionally fragile relative to the scale of the disinformation problem it confronts.

The Digitally Right research on Bangladesh's misinformation threat ahead of the 2026 polls, which documented a 30 percent increase in documented misinformation in 2025 compared to 2024 and which identified AI-generated content as a significant and growing fraction of the misinformation circulating in the Bangladeshi information environment, provides the most current and most policy-relevant quantitative basis for understanding the scale of the problem. The technology journalist covering this story should treat the Digitally Right data not as a final account of the disinformation problem but as a starting point for deeper investigation into the specific actors generating disinformation, the specific methods they are using, the specific platforms through which they are distributing it, and the specific regulatory and legal tools that are or are not available to address it.

72.5 Technology Journalism Ethics: Conflict of Interest in the Tech Beat

The specific conflict of interest landscape of technology journalism in Bangladesh deserves explicit discussion because it differs in important ways from the conflict of interest landscape in other journalism beats, and because the specific financial relationships between technology companies and media organizations create pressures on technology journalism that are not always visible and are rarely discussed openly.

The technology sector is a significant and growing source of advertising revenue for Bangladeshi digital media, and the financial relationships between technology companies and media organizations create specific incentives for favorable coverage of technology companies and products that the technology journalist must be aware of and must actively resist. The specific practice of sponsored content and native advertising in technology journalism, in which technology companies pay for content that presents their products and services favorably and that is published alongside or in the guise of editorial content, is widespread in Bangladeshi digital media and creates specific risks of misleading readers about the independence of technology coverage.

The specific relationship between telecommunications companies and Bangladeshi media is particularly important because the telecommunications sector is both a major advertiser and a major political actor, and the media organizations that depend on telecom advertising revenue face specific pressures to avoid coverage that is critical of telecom companies or that supports regulatory actions against them. The technology journalist who investigates network neutrality, data pricing practices, the use of network-level censorship, or the political connections of telecom operators is operating in an area where her outlet's financial interests and its journalistic independence are in direct tension, and she must be prepared to navigate this tension with both professional integrity and institutional support.

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Chapter Seventy-Three: Agricultural Science Journalism in Bangladesh

73.1 Agriculture at the Intersection of Science, Culture, and Survival

Agricultural science journalism in Bangladesh is different from agricultural science journalism anywhere else in the world, not because the scientific methods involved are different but because the stakes, the social context, and the specific intersection of scientific questions with cultural and political power are configured in ways that make the Bangladeshi agricultural journalism beat one of the richest and most demanding in the entire field of science journalism. Bangladesh is a country in which agriculture remains central to the livelihoods of a majority of the population, in which the specific varieties of rice, jute, and vegetables grown by millions of small farmers are the product of millennia of agricultural selection and development, and in which the scientific management of agricultural systems intersects with the fundamental questions of food sovereignty, cultural identity, and political economy that this textbook has argued throughout must be central to sophisticated science journalism.

The agricultural science landscape of Bangladesh includes a set of government research institutions with genuine scientific capacity and genuine track records of agricultural innovation. The Bangladesh Agricultural Research Institute (BARI), founded in 1976 with a mandate covering field crops, vegetables, and horticultural science, has developed hundreds of improved varieties of crops and has conducted research on pest management, soil science, and post-harvest technology that has real value for Bangladeshi farmers. The Bangladesh Rice Research Institute (BRRI), established in 1970, has been a world leader in the development of flood-tolerant, drought-tolerant, and saline-tolerant rice varieties, and its research on submergence-tolerant rice varieties, conducted in collaboration with the International Rice Research Institute (IRRI), produced the Swarna-Sub1 and related varieties that have provided protection against flooding for millions of Bangladeshi farmers and have been adopted across South and Southeast Asia.

The agricultural journalist covering BRRI and BARI and their research outputs must understand both the scientific methodology of agricultural research and the specific institutional context in which these research programs operate. The institutional context includes the specific funding arrangements, which involve a combination of government allocation, international donor support, and research contracts with commercial seed companies, each of which creates specific incentives and constraints on the research agenda. It includes the specific relationship between the research institutions and the government's agricultural policy machinery, which shapes what research outcomes are adopted into policy and what are not. And it includes the specific relationship between the research institutions and the farming communities whose practices are the intended beneficiaries of agricultural research, a relationship that is not always as direct or as consultative as it should be.

73.2 The Seeds and Sovereignty Controversy: Biosafety, GMOs, and the Politics of Agricultural Biotechnology

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The development and deployment of genetically modified crops in Bangladesh represents one of the most scientifically contested, politically charged, and journalistically challenging stories in the agricultural science domain, and it serves as an excellent case study for examining how the tensions between scientific authority, political power, cultural identity, and democratic accountability play out in the specific context of agricultural science journalism.

Bangladesh became the first country in the world to approve commercial cultivation of Bt brinjal (Bt eggplant), a genetically modified variety of brinjal engineered to contain a bacterial gene (Bacillus thuringiensis or Bt) that confers resistance to the fruit and shoot borer, a major pest. The commercial cultivation of four varieties of Bt brinjal was approved by the Bangladesh government in 2013, following a biosafety review process that was itself the subject of significant controversy, and cultivation began in 2014. The Bt brinjal story has generated extensive debate both within Bangladesh and internationally about the specific risks and benefits of genetically modified crops, about the adequacy of the regulatory process, about the role of international agricultural research institutions including BARI's collaborator Cornell University and the supporting agricultural biotechnology programs funded by the United States Agency for International Development (USAID), and about the specific implications of GM crop commercialization for Bangladesh's seed sovereignty and its small-scale farming communities.

The journalist covering Bt brinjal in Bangladesh immediately confronts the fundamental challenge of scientific controversy: how to report accurately and fairly on a topic where genuine scientific experts hold genuinely different views, where those views are shaped by disciplinary assumptions, institutional affiliations, and cultural values as well as by evidence, and where the stakes for the farmers who will grow or not grow the crop, for the consumers who will eat or not eat it, and for the agricultural biotech industry that seeks to expand its presence in Bangladesh's seed market are all real and significant.

The scientific consensus on the safety of approved genetically modified crops for human consumption is strong within the mainstream scientific community, represented by the positions of organizations including the World Health Organization, the National Academies of Sciences in multiple countries, and the CGIAR consortium of international agricultural research centers. The specific evidence on the agronomic performance and pest management benefits of Bt brinjal in Bangladesh, which has been studied by researchers at BARI and Cornell as well as by critics of the technology, is more mixed, with some studies documenting significant reduction in pesticide use and some improvement in yields, and other studies raising questions about the persistence of pest resistance to the Bt toxin, the agronomic performance of approved varieties, and the adequacy of the biosafety review.

The agricultural journalist who wants to report responsibly on Bt brinjal must be equipped to evaluate the specific scientific claims on both sides of the debate, to identify the specific institutional affiliations and funding relationships that may shape researchers' positions, to understand the regulatory framework within which Bangladesh's biosafety decisions are made and the specific international standards against which that framework should be evaluated, and to represent the perspectives of the farming communities most directly affected by the technology in ways that give genuine weight to their knowledge and values without simply deferring to

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traditional practices as automatically superior to scientific innovation. This combination of scientific literacy, regulatory knowledge, investigative capacity, and epistemological humility is precisely the combination that this textbook has argued throughout must characterize the sophisticated science journalist.

73.3 Food Safety and the Agricultural Supply Chain: An Investigative Frontier

Food safety represents an area where agricultural science journalism intersects most directly with the daily lives of ordinary Bangladeshis, and where the specific failures of the regulatory system have the most immediate health consequences. The adulteration of food products, the use of prohibited pesticides and food additives, the contamination of food by industrial pollutants, and the specific risks associated with street food and informal food vendors are all dimensions of a food safety landscape that has received some journalistic attention but that remains significantly underinvestigated relative to its public health importance.

The Bangladesh Food Safety Authority (BFSA), established under the Food Safety Act of 2013, is the primary regulatory body with responsibility for food safety in Bangladesh. The BFSA has faced significant institutional challenges including inadequate laboratory capacity for food testing, insufficient enforcement personnel, and a legislative mandate that has not been fully translated into functioning regulatory systems. The specific record of the BFSA in enforcing food safety standards, including the specific cases in which enforcement action has been taken against food adulterators and the specific cases in which enforcement has not been taken despite documented violations, is the kind of institutional performance story that investigative agricultural journalism should be documenting systematically.

The specific problem of pesticide residues in food crops is an area of significant scientific and public health concern that has been documented by Bangladeshi researchers and that deserves more systematic journalistic investigation than it has received. The use of pesticides in Bangladeshi agriculture, including the use of pesticides that are prohibited or restricted in many countries but that remain available in Bangladesh, creates the risk of elevated pesticide residues in food crops that may exceed safe consumption levels. The regulatory framework for maximum residue limits (MRLs) in Bangladesh, which in principle limits the concentrations of specific pesticides that are permissible in specific food commodities, is inadequately enforced and is in some cases set at levels that are less protective than the international standards established by the Codex Alimentarius Commission.

The specific investigative methods available for reporting on food safety include laboratory testing of food samples, which can be conducted by working with university or government laboratories; analysis of the BFSA's inspection and enforcement records, which are in principle accessible through RTI requests; investigation of the pesticide regulatory regime, including the specific substances that are registered for use in Bangladesh and the specific enforcement of restrictions on prohibited substances; and investigation of specific food adulteration scandals, which periodically receive media attention but that rarely receive the sustained follow-up investigation that would be needed to establish full accountability for the harm caused.

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73.4 Climate Change and Agricultural Adaptation: The Science-Policy Interface

The intersection of climate change science and agricultural policy is one of the most important areas of science-policy interface in Bangladesh, and the agricultural science journalist who covers this intersection is engaged in journalism that is simultaneously scientifically demanding, politically significant, and directly relevant to the livelihoods of millions of small farmers.

The specific climate threats to Bangladeshi agriculture documented in the recent scientific literature are diverse and in some cases interacting. The flooding of agricultural land during the monsoon season, which has historically been managed through traditional agricultural practices including the use of flood-tolerant varieties and the practice of floating garden cultivation documented in the Gopalganj area, is projected to become more severe and more unpredictable as climate change increases the variability of monsoon rainfall. The analysis published in the Discover Sustainability journal in October 2025, which used a system dynamics approach to model climate change impacts in the southeast coastal region, documented the interaction between environmental degradation, socioeconomic vulnerability, and policy lag in ways that illustrate the specific complexity of the climate-agriculture intersection in Bangladesh.

The salinization of coastal agricultural land, driven by the combination of sea level rise, reduced freshwater flows through the delta, and the expansion of shrimp aquaculture, is a specific threat to the rice cultivation that provides the food security of coastal communities. The development of saline-tolerant rice varieties by BRRI, and the specific research on identifying and deploying these varieties in the coastal zone, represents a genuine scientific response to a genuine climate threat that the agricultural journalist can report as a positive story of scientific innovation. But the journalist who reports only on the science without reporting on the adequacy of the delivery system, the political economy of seed distribution and the access of the most vulnerable farmers to the improved varieties, and the specific policy environment within which agricultural adaptation is supported or not supported, is reporting only part of the story.

The specific mechanism of climate finance for agricultural adaptation in Bangladesh, including the Bangladesh Climate Change Strategy and Action Plan (BCCSAP) and the Bangladesh Climate Change Trust Fund (BCCTF), which was established in 2010 as one of the world's first domestically funded climate change trusts, provides both a policy object for the journalist to investigate and an investigative opportunity to examine how climate finance actually functions at the level of the farming communities it is supposed to benefit. The investigation of the BCCTF, including the specific projects funded, the criteria for funding allocation, the monitoring and evaluation of project outcomes, and the extent to which the fund's resources actually reach the farmers most vulnerable to climate change, is precisely the kind of investigation that the investigative agricultural journalist trained in the use of RTI requests and financial document analysis should be conducting.

Chapter Seventy-Four: Cross-Domain Investigative Journalism and the Science of Accountability

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74.1 The One Health Framework as Investigative Paradigm

The One Health framework, which recognizes the fundamental interconnections between human health, animal health, and ecosystem health, and which has been adopted by the WHO, the Food and Agriculture Organization, and other international health and environment bodies as a framework for understanding and addressing complex public health challenges, provides an important investigative paradigm for the Bangladeshi science journalist who wants to work across the artificial boundaries between the health, environment, and agriculture domains.

The specific application of the One Health framework in Bangladesh illuminates a set of interconnected problems that no single journalism beat can adequately cover on its own. The emergence of antimicrobial resistance in Bangladesh, driven by the combination of inappropriate human antibiotic use in a health system with inadequate diagnostic capacity, antibiotic use in the livestock sector for growth promotion and disease prevention, and the discharge of antibiotic-laden effluent from pharmaceutical manufacturing and from livestock operations into water bodies, is a One Health story that requires the health journalist's knowledge of antibiotic resistance biology, the agricultural journalist's knowledge of livestock production practices, and the environmental journalist's knowledge of water contamination pathways to tell adequately.

The specific Bangladeshi data on antimicrobial resistance, which has been generated by research programs including studies at ICDDR,B and collaborating international institutions, documents concerning levels of resistance in both human clinical pathogens and in environmental samples from water and soil. The investigative journalist covering this story needs to understand both the science of resistance development and the specific regulatory framework governing antibiotic use in Bangladesh, which includes the Veterinary Drug Act that governs antibiotic use in livestock and the drug regulations that govern antibiotic prescribing in human medicine. The specific enforcement of these regulations, and the specific gaps between regulatory requirements and actual practice, are the investigative dimensions of the story.

The specific risk of zoonotic disease transmission in Bangladesh, including the specific threats posed by avian influenza strains circulating in poultry populations, by Nipah virus carried by fruit bats, and by various other pathogens at the animal-human interface, similarly requires a One Health investigative approach. The Nipah virus outbreaks that have occurred in Bangladesh, documented in the scientific literature and associated primarily with the consumption of raw date palm sap contaminated by bat secretions, represent a genuinely complex One Health story that requires understanding of viral epidemiology, of bat ecology, of the specific cultural practices around date palm sap consumption, and of the public health and science communication challenges of advising communities to modify practices that are both economically important and culturally embedded.

74.2 Investigative Science Journalism and the Legislative Arena: Tracking Science Policy

The relationship between science journalism and the legislative process is an area that is significantly underexplored in Bangladeshi journalism practice, despite the fact that the most consequential decisions affecting the scientific issues the journalist covers are often made not in

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laboratories or conference rooms but in the legislative and regulatory arena, where laws governing food safety, environmental protection, pharmaceutical regulation, technology governance, and agricultural research are debated, adopted, and amended.

The legislative investigation of science policy in Bangladesh requires the journalist to develop a specific competence in legislative analysis: the ability to read and understand proposed legislation and regulations, to identify the specific provisions that are likely to have significant consequences for the scientific issues she covers, to trace the specific interests and coalitions that are shaping legislative outcomes, and to communicate the significance of legislative developments to non-specialist audiences in ways that make the abstract processes of law-making concretely relevant to everyday life.

The specific legislative developments of the 2024 to 2026 period, discussed in various places throughout this textbook, provide case studies for this kind of investigative legislative journalism. The development of the Cyber Protection Ordinance and the Personal Data Protection Ordinance, both discussed in Part Six, are examples of legislative developments with direct and significant implications for technology journalism and for the broader science journalism ecosystem. The proposed National Media Commission Ordinance released by the interim government on January 28, 2026, which the IFJ noted was released with only three days for public feedback and which disregarded many of the Media Reform Commission's recommendations, illustrates the specific way in which legislative processes in Bangladesh can move quickly and with limited transparency in ways that create specific challenges for journalists who want to monitor and report on them.

The Food Safety Act, the Bangladesh Environment Conservation Act, the Drugs (Control) Ordinance, and the various pieces of legislation governing agricultural research and seed regulation are all pieces of legislation that directly shape the conditions under which the specific types of science journalism examined in this Part are conducted, and the journalist who understands these legislative frameworks, their historical development, and their current limitations is better equipped to report on the specific institutional failures, regulatory gaps, and political choices that her investigative work reveals.

74.3 Data Journalism and Science: The Emerging Frontier in Bangladesh

The application of data journalism methods to science reporting represents one of the most significant recent developments in the global practice of science journalism, and its specific application in Bangladesh is an emerging frontier that deserves extended attention in any serious treatment of contemporary science journalism practice. Data journalism, which uses computational methods to analyze large datasets and to produce journalism that is grounded in systematic empirical analysis rather than in anecdote and selective observation, offers specific and powerful tools for the kinds of scientific and investigative reporting that the domains examined in this Part require.

The specific datasets that are most relevant to data science journalism in Bangladesh include the epidemiological surveillance data collected by the Directorate General of Health Services, which

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provides the empirical foundation for reporting on disease trends and health system performance; the environmental monitoring data collected by the Department of Environment and the Bangladesh Meteorological Department, which provides the empirical foundation for reporting on air quality, water quality, and climate; the agricultural production data collected by the Bangladesh Bureau of Statistics and the Bangladesh Bureau of Agricultural Statistics, which provides the foundation for reporting on crop yields, food production trends, and the performance of specific varieties and technologies; and the digital communications data collected by the BTRC, which provides the foundation for reporting on internet access, mobile connectivity, and the specific patterns of digital communication that shape the information environment.

The specific skills required for data journalism in Bangladesh include competence in data collection through web scraping, RTI requests, and the direct download of publicly available datasets; competence in data cleaning and preparation, which is essential because government data in Bangladesh is often poorly formatted, inconsistent, and incomplete; competence in statistical analysis sufficient to identify meaningful patterns in data and to avoid spurious findings; competence in data visualization sufficient to present complex statistical information in forms that are accessible and accurate for non-specialist audiences; and competence in the specific programming tools, including Python, R, or similar languages, that are used for the computational components of data analysis.

The development of data journalism capacity in Bangladeshi science journalism is a long-term project that requires both individual skill development and institutional investment in computational infrastructure, data access, and editorial support for data-driven reporting. The examples of data journalism organizations in countries with comparable media and institutional environments, including IndiaSpend in India, which has developed a model of data-driven public interest journalism that operates independently of major media organizations, suggest possible institutional models for the development of this capacity in Bangladesh. The specific commitment to open data and transparent methodology that characterizes good data journalism also offers a model for the kind of epistemological transparency in science journalism that this textbook has argued throughout should be a central professional value.

Chapter Seventy-Five: The Comparative Analysis of Regulatory Failures in Science Domains

75.1 Why Regulatory Failure Is the Most Important Story in Science Journalism

Across all four domains examined in this Part, a common pattern emerges that is perhaps the most important single observation in the entire account of science journalism practice in Bangladesh: the most significant and most consequential stories in health, environmental, technology, and agricultural science journalism are almost always stories of regulatory failure, and the science journalist who understands how regulatory systems are supposed to work, why they fail, and how to investigate and document those failures is the journalist who can make the

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most significant contribution to the democratic accountability function that her profession exists to provide.

Regulatory failure in the context of science journalism does not simply mean that regulations are not being enforced, though inadequate enforcement is a common and important dimension of regulatory failure. It means more broadly that the regulatory systems that are supposed to protect the public from the risks created by pharmaceutical products, industrial pollution, food adulterants, digital surveillance, and agricultural technologies are not fulfilling that protective function, whether because the regulations are inadequate, because they are being captured by the interests they are supposed to regulate, because they are being enforced selectively in response to political rather than public health criteria, or because the institutional capacity needed to implement them is lacking.

The sociology of regulation provides the theoretical framework for understanding why regulatory failure is so common and so persistent. The phenomenon of regulatory capture, first described systematically by the economist George Stigler in 1971, refers to the process by which regulatory agencies come to represent the interests of the industries they are supposed to regulate rather than the interests of the public. The mechanisms of capture are varied and often subtle: they include the revolving door between regulatory agencies and the industries they regulate, through which personnel with industry experience move into regulatory positions and personnel from regulatory agencies move into industry; the financing of regulatory agencies through the industries they regulate, which creates financial dependencies that constrain independence; the informational asymmetry between regulators and regulated industries, which gives industries with sophisticated technical operations an advantage over regulators with limited technical staff and resources; and the political connections between industry representatives and the political authorities that set the mandates and budgets of regulatory agencies.

In Bangladesh, each of these capture mechanisms operates in the specific context of a country where regulatory institutions are underfunded, where the political connections between economic elites and the government are particularly tight, where the revolving door between regulatory agencies and regulated industries is not governed by the kind of cooling-off period requirements that exist in some wealthy countries, and where the civil society and journalistic monitoring of regulatory agencies is inadequately resourced. The result is a regulatory environment in which capture is a pervasive and persistent problem across multiple domains, and in which the science journalist who investigates regulatory capture is doing something genuinely important for democratic governance.

75.2 The Jurisprudential Foundations of Regulatory Law in Bangladesh

The jurisprudential analysis of regulatory law in Bangladesh reveals a distinctive pattern in which the formal legal framework is often substantially more protective than the actual practice of regulation, and in which the gap between law and practice is itself a subject of Supreme Court attention through public interest litigation. This gap between legal norm and regulatory practice is the central jurisprudential fact about Bangladeshi regulatory law, and understanding it is

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essential for the science journalist who wants to use legal frameworks to hold regulatory agencies accountable.

The Bangladesh Supreme Court's development of environmental jurisprudence through public interest litigation provides a model of judicial activism in the regulatory domain that is directly relevant to science journalism. A series of landmark cases beginning in the 1990s and continuing through the 2020s has established the legal principle that the right to a healthy environment is a component of the constitutional right to life guaranteed by Article 31 of the Constitution, and that public bodies including environmental regulatory agencies have justiciable obligations to take effective action to protect this right. The specific judgments in these cases have ordered environmental agencies to take specific enforcement actions, have established specific standards for environmental protection in particular contexts, and have created precedents that can be invoked in future litigation.

The science journalist who understands this jurisprudential landscape is equipped to use it both as a source of investigative leads, since Supreme Court judgments often document specific regulatory failures that are newsworthy in their own right, and as an advocacy tool, since the threat of public interest litigation is sometimes sufficient to prompt regulatory action that a news story alone might not achieve. The specific provisions of the Environmental Conservation Act, the Food Safety Act, and the pharmaceutical regulatory framework that have been the subject of judicial interpretation provide the legal content that the journalist covering regulatory failure needs to understand.

The philosophical dimensions of regulatory jurisprudence are also relevant to the science journalist's analytical framework. The fundamental philosophical question of what justifies state regulation of economic activity, and how the specific costs and benefits of regulation should be weighed against each other, is not merely an academic question: it is the question that regulatory agencies are implicitly or explicitly answering every time they make a regulatory decision, and the journalist who understands the philosophical terrain of this question is better equipped to evaluate whether specific regulatory decisions are adequately justified.

The utilitarian framework for regulatory analysis, which evaluates regulations by their consequences for aggregate welfare, provides the foundation for cost-benefit analysis, which is the dominant methodology of regulatory economic analysis in wealthy countries and which has been increasingly influential in international regulatory frameworks. The rights-based framework for regulatory analysis, associated with libertarian and neo-liberal traditions but also with human rights law, evaluates regulations by their respect for individual rights and freedoms, and can support both stronger and weaker regulation depending on how the relevant rights are defined. The precautionary principle, which holds that when there is scientific uncertainty about potential harms, the burden of proof should be on those who want to introduce potentially harmful activities to demonstrate safety rather than on regulators to demonstrate harm, is a specific principle of environmental and health regulatory philosophy that has been incorporated into a number of international agreements and that is directly relevant to the Bangladeshi regulatory context.

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75.3 Whistleblower Protection and the Science of Institutional Accountability

The specific mechanism through which many of the most important regulatory failures become visible to journalists is the whistleblower: the individual with insider knowledge of institutional misconduct who decides, at significant personal risk, to disclose that knowledge to journalists or to other accountability institutions. The protection of whistleblowers is therefore directly relevant to the quality of science journalism in every domain examined in this Part, because without whistleblower protection, many of the most important stories about regulatory failure, research misconduct, and institutional corruption will remain undetectable to journalists who lack insider access.

Bangladesh does not have a comprehensive whistleblower protection law as of early 2026, a significant gap in the legal framework for accountability that leaves individuals who disclose institutional wrongdoing without the legal protections that whistleblower protection laws in other countries provide against retaliation including termination of employment, civil liability, and criminal prosecution. The absence of this legal protection has specific and direct consequences for science journalism in all four domains examined in this Part: it deters potential sources from disclosing information about pharmaceutical safety issues, environmental violations, food adulteration, and technology-driven surveillance that they would otherwise be willing to bring to journalists' attention.

The international comparative experience with whistleblower protection legislation, including the United States False Claims Act, which provides financial incentives for individuals to disclose fraud against the government; the European Union's Directive on the Protection of Persons Who Report Breaches of Union Law, which requires member states to establish protected reporting channels and protections against retaliation; and the WHO's internal whistleblower protection policy, which applies to WHO staff who disclose misconduct within the organization, provides the comparative framework within which Bangladesh's regulatory gap can be understood and within which advocacy for legislative reform can be grounded.

The science journalist's responsibility with respect to whistleblowers is both to protect them through rigorous source protection practices, discussed in Part Six, and to advocate for the legal protections that would make whistleblowing less personally costly. The journalist who is aware of potential whistleblowers in the pharmaceutical industry, in an environmental regulatory agency, or in an agricultural research institution should be equipped both to receive and protect their information and to explain to them the legal risks they face and the limited legal protections currently available to them.

Chapter Seventy-Six: The Making of the Domain-Specific Science Journalist in Bangladesh

76.1 Pathways to Specialization: Educational and Professional Development

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The development of domain-specific expertise in the four areas examined in this Part does not occur through journalism education alone, and the student who expects to leave a journalism program fully equipped for any of these demanding specializations will be disappointed. The development of genuine domain expertise requires sustained engagement with the scientific, legal, regulatory, and political dimensions of the domain over an extended period of professional practice, complemented by targeted formal education and by the mentorship of more experienced practitioners.

The specific educational pathways that can contribute to the development of domain expertise include formal academic study in the relevant scientific discipline, which provides the deepest possible foundation for domain-specific scientific literacy but which is not always practical for journalists who have already completed their journalism education; targeted courses in scientific literacy and specific domain knowledge, offered by organizations including the Press Institute of Bangladesh, the Management and Resources Development Initiative (MRDI), and various international training programs; and the specific training programs provided by organizations like the Center for Investigative Journalism, which has developed specific curricula for environmental, health, and agricultural investigation.

The MRDI, which the Center for Investigative Journalism's Dhaka training program identifies as a leading capacity-building organization for Bangladeshi journalism, with specific expertise in investigative journalism including the use of RTI for investigations, represents an important domestic institutional resource for the development of domain-specific investigative capacity. The specific expertise represented by the MRDI's Head of Investigative Journalism Help Desk, described as an award-winning producer and investigative journalist with 21 years of experience, illustrates the importance of experienced practitioner mentorship in the development of investigative journalism skills that cannot be adequately conveyed through academic instruction alone.

The climate change journalism training programs documented by the Center for Investigative Journalism, which include sessions on climate change concepts, interview techniques, RTI use for investigations, climate justice, mapping tools, the intersection of gender and climate reporting, the investigation of the climate trust fund, and scrutiny of global projects, illustrate the specific combination of scientific, legal, investigative, and social literacy that domain-specific journalism training needs to provide. The roster of trainers identified for these programs, which includes lawyers from the Bangladesh Environmental Lawyers Association, special correspondents from Prothom Alo with specific environment beat expertise, university economists specializing in climate and gender justice, and representatives from the International Centre for Climate Change and Development (ICCCAD), illustrates the kind of interdisciplinary faculty that domain-specific science journalism training requires.

76.2 The Beat Reporter Model and Its Limitations in Bangladesh

The institutional model of the beat reporter, who develops and maintains long-term coverage of a specific domain by building sustained relationships with sources, developing institutional knowledge of the relevant organizations and processes, and establishing professional credibility

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with both sources and audiences, is the dominant model of specialized journalism in wealthy-country media organizations and has been the aspiration of larger Bangladeshi news organizations as well. The limitations of this model in the Bangladeshi context, however, are significant and deserve explicit analysis.

The first and most fundamental limitation is resource-based: the beat reporter model requires a news organization to assign a journalist specifically and continuously to a single coverage domain rather than deploying her across multiple assignments, and this level of resource commitment is beyond the capacity of most Bangladeshi news organizations, particularly the smaller regional outlets that serve populations outside Dhaka and that often cover the communities most directly affected by the health, environmental, agricultural, and technology stories that this Part has examined.

The second limitation is institutional: the beat reporter who develops sustained relationships with the specific institutions and sources in her domain is vulnerable to a specific form of capture in which the relationships that are the foundation of her access and source development become constraints on the independence and critical edge of her reporting. This capture dynamic, which is not unique to Bangladesh but which is particularly acute in a context where the institutions being covered have significant power over individual journalists' professional futures, requires explicit awareness and explicit countermeasures including the development of source relationships across a wide range of institutional perspectives rather than dependence on a small number of powerful institutional sources.

The third limitation is epistemological: the beat reporter who covers a specific domain for an extended period develops expertise in the conventions and categories of that domain, which is an asset for the accuracy and depth of her reporting, but can also become a constraint on her capacity to see the domain from perspectives outside its conventional frameworks. The health journalist who has covered the formal health system for many years may have difficulty seeing the health stories that are invisible from within the formal health system's perspective, including the health consequences of food system failures, environmental exposures, and social determinants of health that fall outside the conventional categories of clinical medicine and public health.

76.3 The Collaborative Model: Networks, Shared Resources, and Investigative Partnerships

The limitations of the individual beat reporter model in the Bangladeshi context point toward the need for alternative institutional models that can provide the depth and continuity of domain-specific coverage without requiring the resource levels that the traditional beat reporter model demands. The collaborative model, in which networks of journalists with shared domain interests pool resources, share information, and coordinate coverage while maintaining their individual editorial independence, is the most promising alternative model for the specific conditions of Bangladeshi science journalism.

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The specific institutional forms that collaborative science journalism can take range from informal networks of journalists with shared domain interests who exchange information and peer-review each other's work, to formal investigative teams with shared resources and shared editorial direction, to networked organizations that provide shared investigative infrastructure including laboratory testing capacity, data analysis tools, and legal support, while allowing individual journalists and news organizations to maintain editorial autonomy over the specific stories they produce.

The development of such collaborative infrastructure in Bangladesh requires both organizational development work and funding that goes beyond the capacity of individual news organizations. The international philanthropic investment in journalism capacity-building discussed in Part Seven provides one possible funding source, though the dependency risks associated with international funding require careful attention. The development of a domestic philanthropic ecosystem that supports quality journalism, analogous to the National Endowment for the Arts and Sciences in some countries or the journalism foundations that have emerged in a number of wealthy countries in recent decades, represents a longer-term institutional development goal.

The specific example of the Center for Investigative Journalism in Bangladesh, and of the investigative journalism capacity-building work of the MRDI, suggest that a domestic ecosystem of journalism support organizations is beginning to develop in Bangladesh, and that this ecosystem can be strengthened through both local institutional development and international partnership. The specific needs of domain-specific science journalism within this ecosystem include the development of scientific advisory networks that can provide journalists with rapid access to expert evaluation of scientific claims, the development of laboratory testing capacity for environmental and food safety investigations, and the development of data journalism infrastructure including shared data repositories and computational tools that individual organizations cannot afford to maintain independently.

Coda to Part Eight: The Science Journalist as Democratic Actor

The examination of health, environmental, technology, and agricultural science journalism in Bangladesh that this Part has conducted leads to a conclusion that is both sobering and motivating. Sobering, because the gap between the scale and urgency of the scientific challenges facing Bangladesh and the current capacity of the science journalism system to investigate, analyze, and communicate those challenges is enormous. The February 2026 documentation by the IFJ of a press freedom crisis in which seven journalists have been murdered, the bank accounts of dozens frozen, fourteen thousand journalists' personal data exposed through a government data breach, and 89 percent of journalists fearing physical assault, describes a professional environment in which the minimum conditions for the kind of ambitious, investigative, domain-specific science journalism that this Part has argued is necessary do not currently exist across much of the Bangladeshi media landscape.

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Motivating, because the same period has also produced extraordinary examples of what Bangladeshi science journalism can achieve under the most difficult conditions. The journalists who documented the dengue epidemic at its peak, who reported on river pollution in the face of corporate and political pressure, who covered the technology-enabled surveillance of journalists during the political transition, and who investigated specific cases of food adulteration and pharmaceutical fraud were not operating in ideal conditions: they were operating in exactly the conditions described in the UNESCO World Press Freedom Day 2025 report, which characterized World Press Freedom Day in Bangladesh as a bold call to action precisely because the conditions facing journalism required boldness to address.

The science journalist as democratic actor is not a comfortable role or a safe one. She is a person who chooses to investigate, document, and communicate information about the most powerful forces affecting human welfare in one of the world's most challenging environments for free expression, on behalf of a public whose ability to understand and respond to those forces depends critically on what she is willing and able to do. The recognition of this role's importance is itself a contribution that this textbook aspires to make: to convince the next generation of Bangladeshi science journalists that what they do matters, that the knowledge and commitment they bring to their work can make a real difference in the lives of real people, and that the combination of scientific literacy, investigative capacity, philosophical depth, and democratic commitment that this textbook has argued throughout should characterize their practice is not an unreasonable demand but a justified one.

Chapter Notes and Further Reading for Part Eight

On health journalism in the Global South generally, the Journalist's Resource guides published by Harvard Kennedy School provide accessible entry points. Marcia Angell's "The Truth About the Drug Companies" (2004) and Ben Goldacre's "Bad Pharma" (2012) provide the foundational critical accounts of pharmaceutical industry influence on medical science. Peter Gotzsche's "Deadly Medicines and Organised Crime" (2013) extends this analysis further. For the specific Bangladesh health context, ICDDR,B's annual reports provide the most current epidemiological data, and the WHO Bangladesh Country Office's country health profiles provide accessible summaries.

On environmental journalism in Bangladesh specifically, the content analysis study published in the International Journal of Research in Information Systems and Analysis examining six regional newspapers during March 2025 is the most current empirical assessment. The Journalism Studies article by Uddin on environmental journalism and active social agency provides the foundational theoretical framework for understanding environmentally engaged journalism. The study on environmental reporting in Bangladeshi print media published in the International Journal of Scientific Research and Analysis provides the most comprehensive qualitative analysis.

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On agricultural science journalism and biotechnology controversy, the academic literature on the Bt brinjal controversy includes extensive coverage from both proponents and critics. Glenn Stone's research on the sociology of agricultural technology adoption, published in various journals including World Development, provides critical analysis. Raj Patel's "Stuffed and Starved" (2008) provides the political economy framework for understanding agricultural technology choices in developing countries. For Bangladesh specifically, the BRRI annual reports and the CGIAR center reports provide the scientific foundation.

On technology journalism and AI governance, the EU AI Act text and the associated impact assessment documents provide the most comprehensive legislative framework. The UNESCO Recommendation on the Ethics of Artificial Intelligence (2021) provides the international normative framework. For Bangladesh specifically, the Digitally Right research reports on AI and disinformation, the access now reports on internet shutdowns in Bangladesh, and the International Federation of Journalists reports on press freedom during the 2024 to 2026 transition period provide the most current and most relevant factual documentation.

On regulatory failure and capture theory, George Stigler's "The Theory of Economic Regulation" (1971) is the foundational academic text. Daniel Carpenter and David Moss's edited volume "Preventing Regulatory Capture" (2013) provides the most comprehensive contemporary analysis. For the Bangladesh regulatory context specifically, the Bangladesh Enterprise Institute reports on regulatory reform and the Transparency International Bangladesh reports on corruption in specific regulatory agencies provide the most directly relevant documentation.

On One Health frameworks and journalism, the WHO/FAO/OIE joint publication on One Health provides the institutional framework. Dennis Carroll and colleagues' work on the Global Virome Project and pandemic prevention provides the specific science of zoonotic disease risk. For Bangladesh specifically, the research on Nipah virus published in various epidemiological journals by ICDDR,B researchers provides the foundational scientific account.

On data journalism and science reporting, Jonathan Stray's "The Curious Journalist's Guide to Data" (2016) provides an accessible introduction. Paul Bradshaw's work on data journalism methods, available through the Online Journalism Blog and associated publications, provides practical guidance. The work of Nicholas Diakopoulos on computational journalism and algorithmic accountability is directly relevant to the intersection of data journalism and technology journalism. For Bangladesh specifically, the Data Journalism Awards entries from Bangladeshi organizations and the MRDI's published training materials provide the most contextually relevant practical examples.

On whistleblower protection law and policy, Tom Devine and Tarek Maassarani's "The Corporate Whistleblower's Survival Guide" provides the practitioner perspective. Marcia Miceli, Janet Near, and Terry Dworkin's "Whistle-Blowing in Organizations" (2008) provides the academic foundation. The Government Accountability Project's comparative analysis of international whistleblower protection frameworks provides the most useful comparative legal analysis for advocates of reform in countries like Bangladesh.

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This concludes Part Eight of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge." Part Nine, the final part of this textbook, will examine the future of science journalism in Bangladesh: the specific opportunities and challenges of the next decade, the institutional reforms needed to create the conditions for science journalism to fulfill its democratic function, the specific educational investments required to build the next generation of scientifically literate, investigatively capable, and democratically committed science journalists, and the vision of what a mature and excellent Bangladeshi science journalism might look like as a contribution not just to the country's democratic life but to the global science journalism conversation.

PART NINE: THE FUTURE OF THE CONTESTED LENS - TOWARD INSTITUTIONAL MATURITY, DEMOCRATIC COMMITMENT, AND THE EMANCIPATORY SCIENCE JOURNALISM OF TOMORROW

Prolegomena to Part Nine: The Necessity and the Danger of Looking Forward

There is a particular intellectual danger in writing about the future. The danger is not primarily the obvious one of prediction, which anyone who has studied history and social science knows to be unreliable. The deeper danger is the danger of prescription masquerading as description: the tendency of the analyst who writes about what should happen to slide quietly, without fully acknowledging the move, into writing about what will happen, investing her normative preferences with the authority of forecasted fact. This textbook has tried throughout its eight preceding parts to be honest about its own normative commitments, to be transparent about what it values and why, and to distinguish between its empirical claims and its political and ethical judgments. Part Nine must be especially careful about this distinction, because Part Nine is explicitly about the future, and the future is the domain in which the temptation to conflate hope with expectation is most seductive and most treacherous.

With that caveat in place, this Part will argue that the future of science journalism in Bangladesh is not simply open, in the sense that anything might happen. It is open within constraints, and understanding those constraints, their nature, their origins, their mutability, and their specific form in the Bangladeshi political, economic, and cultural context, is the precondition for any serious analysis of what the future might hold and what efforts to shape it in emancipatory directions would need to accomplish. The constraints are real, and they are severe. The seven journalists murdered since July 2024, the bank accounts of over eighty journalists frozen, the fourteen thousand journalists whose personal data was exposed in a government data breach in January 2026, the 89 percent of journalists who reported fearing physical assault during pre-election reporting according to the Digitally Right survey of December 2025: these are not aberrations. They are the symptoms of structural conditions that have persisted across successive governments of radically different ideological orientations, and they will not be dissolved by electoral change alone.

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But the constraints are not fixed. The Bangladesh Media Reform Commission's recommendations, submitted in January 2025 and still largely unimplemented as of April 2026, represent a genuine and intellectually serious engagement with the structural problems of the Bangladeshi media environment. The UNESCO World Press Freedom Day 2025 dialogue in Dhaka, convened in partnership with the Embassy of Sweden and Transparency International Bangladesh and bringing together over one hundred journalists, editors, policymakers, civil society leaders, students, and international partners, demonstrated that a serious reform conversation is occurring and that it involves a broad coalition of actors who understand the stakes. The RSF World Press Freedom Index improvement of sixteen places, from 165th to 149th, between 2024 and 2025 is a real improvement, however inadequate as an absolute measure of press freedom conditions. The 2025 Cyber Security Ordinance's removal of the most egregiously repressive provisions of the Digital Security Act, while leaving troubling residual provisions including the vaguely worded Section 26 criminalizing content creating "anxiety," represents genuine if incomplete legislative progress.

The student of science journalism in Bangladesh must hold all of this simultaneously: the severity of the structural constraints, the reality of the reform conversation, the inadequacy of reforms achieved to date, the genuine possibility that things could be significantly better, and the equally genuine possibility that things could become significantly worse. The February 2026 national elections, described by the IFJ as the first "free and fair" poll in at least a decade, took place in a context in which the pre-election period was, in the IFJ's documentation, "marked by repeated incidents of violence, intimidation, arrests and legal harassment, and targeting of journalists and media workers, creating a climate of fear." Whatever the election's immediate outcome, the deeper structural conditions shaping the media environment will not be transformed by a single election cycle.

This Part is therefore not a celebration of a problem solved. It is an analysis of a problem whose solution requires sustained, multi-generational, institutionally sophisticated effort across multiple domains simultaneously. It examines the institutional reforms that a functioning democratic science journalism in Bangladesh would require, the educational investments needed to build the professional community capable of doing that journalism, the theoretical frameworks that should inform both the practice and the education, the specific challenges posed by digital transformation and artificial intelligence, and the vision of what a mature and excellent Bangladeshi science journalism might actually look like if all of these conditions were substantially met. It concludes with a synthesis that situates science journalism within the larger philosophical and jurisprudential traditions that this textbook has drawn on throughout, and with a coda that speaks honestly about the emotional and political stakes of the enterprise.

Chapter Seventy-Seven: The Stakes of the Next Decade - Bangladesh's Scientific and Democratic Crossroads

77.1 The Scientific Challenges That Journalism Must Address

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The argument for investing seriously in science journalism in Bangladesh is not, at its most fundamental level, about the journalism profession or even about democracy, important as both are. It is about survival. Bangladesh in the third decade of the twenty-first century faces a convergence of scientific challenges that are more urgent, more complex, and more consequential than at any previous period in the country's history. The nature and scale of these challenges must be the starting point for any discussion of what science journalism should aspire to do, because they define the terms on which the profession's success or failure must ultimately be judged.

The climate crisis is the most profound of these challenges, and the one for which Bangladesh's exposure is most severe and most clearly documented. The scientific consensus, as expressed in the successive reports of the IPCC, is unambiguous in identifying Bangladesh as one of the most climate-vulnerable nations on earth. A country whose geography, hydrology, and agricultural systems have evolved in intimate relationship with the delta systems of the Ganges, Brahmaputra, and Meghna rivers, Bangladesh faces a combination of sea level rise, increasing intensity of cyclonic storms, altered monsoon patterns, and riverine flooding that threatens not merely the livelihoods of its agricultural population but the physical habitability of significant portions of its territory. The projections for sea level rise under various emissions scenarios, combined with the projected increase in the intensity of storm surge events, suggest that tens of millions of people in Bangladesh's coastal districts face the prospect of repeated displacement, with all the social and political consequences that mass displacement brings.

The science journalist's role in this situation is not simply to report on the science, important as accurate science reporting is. It is to investigate the gap between what the science says and what policy actually does. It is to examine the distribution of climate vulnerability, which falls with catastrophic disproportionality on the poorest and most marginalized communities, particularly women, elderly people, and those with disabilities who have the least mobility, the least economic cushion, and the least political voice. It is to investigate the performance of the international climate finance regime, including the Loss and Damage mechanism established at COP27 and elaborated at subsequent COPs, which has particular significance for Bangladesh as a country whose contribution to the stock of greenhouse gases in the atmosphere is negligible compared to the severity of the impacts it already suffers. And it is to investigate the specific adaptive strategies, both technological and social, that communities are already developing in response to climate pressures, because those strategies are themselves a form of scientific knowledge that the dominant institutions of international climate science tend to undervalue.

The public health challenges are equally urgent and equally under-served by the current science journalism infrastructure. Bangladesh's epidemiological situation in the mid-2020s reflects the characteristic disease burden of a middle-income country in epidemiological transition: the acute infectious disease burdens of poverty coexist with the chronic non-communicable disease burdens of urbanization and dietary change. Dengue, which devastated Dhaka and other major cities in the 2023 epidemic that this textbook has analyzed in Chapter 12, has become an endemic fixture of urban public health in Bangladesh rather than an episodic emergency. Antimicrobial resistance, driven by the overuse of antibiotics in human medicine and, critically, in shrimp and poultry aquaculture, represents a growing threat whose scientific dimensions are

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complex, whose economic dimensions implicate powerful commercial interests, and whose public health consequences could be catastrophic at a scale that dwarfs even the worst dengue epidemic. Non-communicable diseases, particularly cardiovascular disease, diabetes, and cancer, are growing rapidly as causes of morbidity and mortality in Bangladesh, driven partly by urbanization, partly by dietary change, and partly by environmental exposures including air pollution and occupational chemical exposure.

Agricultural transformation is the third domain of scientific challenge with directly existential implications for the Bangladeshi population. The next decade will require a transformation of Bangladeshi agricultural systems to maintain food security in the face of climate change, soil degradation, water scarcity, and the economic pressures of global agricultural markets. This transformation will involve contested choices about biotechnology, about water management, about the organization of agricultural markets, and about the political economy of agricultural research and development. The science journalist who can investigate these choices with the combination of scientific literacy, investigative capacity, and political economy awareness that this textbook has argued for is not a luxury that Bangladesh can afford to do without: she is a necessity.

These three domains, climate, public health, and agriculture, interact with each other in ways that create compound vulnerabilities. Climate change threatens agricultural productivity and increases the geographic range of disease vectors. Agricultural practices contribute to antimicrobial resistance and drive environmental degradation that intensifies climate vulnerability. Food insecurity undermines immune function and increases susceptibility to infectious disease. The journalist who can see and communicate these interactions, who can produce what this textbook has called systems journalism, is performing a function that no other institution in Bangladeshi society is currently performing effectively. The universities are too siloed. The government ministries are too bureaucratically compartmentalized. The international development organizations are too shaped by their own institutional mandates and funding structures. Only journalism, operating with genuine independence and genuine investigative ambition, has the structural potential to see the system as a whole and to communicate that systemic view to the public in a way that enables democratic deliberation about the choices it implies.

77.2 The Democratic Context: Elections, Reform, and the Structural Vulnerabilities of Bangladeshi Democracy

The February 2026 elections occurred in a context that embodies, in concentrated form, the structural vulnerabilities of Bangladeshi democracy that this textbook has analyzed throughout its preceding parts. The interim government's stated commitment to democratic reform was genuine, in the sense that key figures within it appear to have sincerely believed in the importance of press freedom and institutional reform. But the gap between the sincerity of commitments and the structural capacity to implement them is precisely the gap that characterizes Bangladeshi democratic development: the repeated experience of genuine reformist ambition being deflected, diluted, or captured by the same structural forces that reformers set out to challenge.

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The proposed National Media Commission, released as a draft ordinance in January 2026 with only three days allowed for public feedback, exemplified this dynamic with painful clarity. The Bangladesh Media Reform Commission's recommendations, developed through an extensive consultative process and representing the most serious engagement with media reform that any Bangladeshi government entity had ever undertaken, were largely disregarded in favor of an ordinance that international media freedom organizations including Article 19 and the IFJ characterized as violating Article 19 of the International Covenant on Civil and Political Rights. The speed, the inadequacy of consultation, and the evident distance between the recommendations and the draft ordinance all suggested that structural forces resistant to genuine media independence, including media owners whose interests are served by the current arrangement, political actors who benefit from media dependence, and security institutions that regard journalism as a threat to be managed rather than a right to be protected, had successfully diluted the reform process even within an interim government that had promised to take reform seriously.

This pattern is not unique to the current moment. It is the characteristic pattern of Bangladeshi democratic development since independence: the recurrence of the reform promise and the structural resistance that dilutes or deflects it. Understanding why this pattern recurs, and what would be needed to break it, is essential for the science journalist who wants to think seriously about what the future holds and what role her work can play in shaping it.

The political science literature on democratic consolidation, drawing on the comparative work of scholars including Juan Linz and Alfred Stepan, distinguishes between the behavioral, attitudinal, and constitutional dimensions of democratic consolidation. Behavioral consolidation occurs when no significant political actor believes it has interests that would be better served by a non-democratic regime. Attitudinal consolidation occurs when a strong majority of the public believes that democratic institutions are the most appropriate form of governance. Constitutional consolidation occurs when governmental and non-governmental forces accept that political conflict must be resolved within democratic procedures. Bangladesh has achieved significant progress on the attitudinal dimension: surveys consistently show strong public support for democratic governance in the abstract. But it has not achieved consolidation on the behavioral and constitutional dimensions, as demonstrated by the repeated experience of governing parties using state institutions, including the judiciary, the police, the regulatory apparatus, and most critically for the purposes of this textbook, the media regulatory system, to entrench their own power rather than to uphold the democratic rules of the game.

The science journalist's relationship to this situation is not a simple one. She is not merely an observer of the democratic condition of Bangladesh. She is, by the nature of her work, a participant in it. The quality of her reporting, the accuracy of her science communication, the honesty of her investigative work, and the courage of her editorial independence all contribute, incrementally and in ways that are difficult to measure but real, to the quality of Bangladeshi democratic life. The converse is also true: the self-censorship that, as the IFJ documents, has become a routine practice of Bangladeshi journalism; the advertorial content masquerading as science reporting; the dependence on institutional handouts rather than independent investigation; the failure to challenge official scientific claims with the critical tools that genuine

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science journalism requires, all contribute to the degradation of the epistemic environment on which democratic deliberation depends.

77.3 The Epistemological Crisis and Its Specific Forms in Bangladesh

The global epistemological crisis, the breakdown of shared factual foundations for democratic deliberation that scholars including Timothy Snyder, Shoshana Zuboff, and Zeynep Tufekci have analyzed in the context of Western democracies, takes specific and distinctive forms in Bangladesh. The crisis is not simply or primarily about the spread of misinformation through social media platforms, though that is a real and serious problem. It is about the deeper structural conditions that determine what kinds of knowledge claims are credible in the public sphere, whose testimony is trusted, and what institutions have the authority to adjudicate factual disputes.

In Bangladesh, these structural conditions are shaped by five overlapping factors that the science journalist must understand in order to navigate them. First, the legacy of systematic institutional dishonesty. The capacity of successive Bangladeshi governments to use state institutions as instruments of political management rather than neutral public services means that a general skepticism toward official information is not irrational. When the government's food safety authority consistently under-reports the prevalence of food adulteration, when the environmental regulatory apparatus consistently fails to enforce standards against politically connected industries, when the epidemiological reporting of the public health system is shaped by the political sensitivities of disease outbreak acknowledgment, the journalist who accepts official scientific information at face value is not being neutral: she is being credulous in a way that serves power.

Second, the weakness of independent scientific institutions. The capacity of Bangladeshi scientific institutions to produce, evaluate, and communicate knowledge that is genuinely independent of political and commercial interests is seriously constrained by the conditions of their funding, their staffing, and their governance. University science departments are politically influenced in their appointments and promotions. Government research institutes are subject to ministerial direction. The relatively small number of genuinely independent scientific research organizations in Bangladesh, of which ICDDR,B is the most prominent, are dependent on international funding in ways that create their own forms of alignment with international rather than domestic research priorities. The science journalist who is looking for independent scientific authority to adjudicate factual disputes will find it in limited and constrained supply.

Third, the proliferation of scientism without science. Bangladesh has a growing community of people who present themselves as scientific authorities on social media, in newspapers, and on television, who use the vocabulary of science, including terms like "research shows," "studies indicate," and "according to experts," without the methodological rigor, the peer review, or the institutional accountability that would give those claims genuine evidential status. This pseudo-scientific discourse is particularly prominent in the areas of nutrition, medicine, and environmental risk, and it fills the space created by the inadequacy of genuine science

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journalism. The science journalist who can distinguish between genuine scientific authority and the performance of scientific authority is performing an indispensable service.

Fourth, the instrumentalization of religious authority. The relationship between religious authority and scientific authority in Bangladesh is complex, historically significant, and profoundly relevant to the practice of science journalism. Religious leaders have, in specific contexts and on specific issues, played a constructive role in public health communication, particularly in the area of vaccination, where religious authority has been mobilized to counter vaccine hesitancy. But religious authority has also been mobilized to suppress scientific discussion of evolution, to constrain reporting on reproductive health and sexuality, and to generate public hostility toward journalists who challenge religious orthodoxy on science-related questions. The science journalist who works in this environment must understand that the epistemological authority of religious claims and the epistemological authority of scientific claims are not simply in opposition: they exist in a complex, context-specific, and historically constituted relationship that requires nuanced navigation rather than simple confrontation.

Fifth, the platform ecology of Bangladeshi digital media. The social media platforms through which an increasing proportion of Bangladeshis receive their information about science and public affairs, particularly Facebook, YouTube, and increasingly TikTok, are algorithmically optimized for engagement rather than accuracy. They systematically amplify emotionally arousing content, reward sensationalism, and disadvantage the kind of careful, qualified, and contextually embedded science reporting that good journalism requires. The science journalist who publishes on these platforms faces a structural choice between compromising the accuracy and nuance of her reporting to compete for attention or maintaining her professional standards at the cost of substantially reduced reach.

Chapter Seventy-Eight: Institutional Reform and the Architecture of a Free and Independent Press - The Unfinished Revolution

78.1 The Media Reform Commission's Recommendations and Their Fate

The Bangladesh Media Reform Commission, established by the interim government in the aftermath of the July 2024 revolution and submitting its recommendations in January 2025, represents the most systematic and intellectually serious attempt to design a reformed institutional architecture for Bangladeshi journalism that has ever been undertaken by any official body. The Commission's recommendations addressed the full range of structural problems identified in this textbook: media ownership and concentration, journalist employment conditions and salary structures, the legal framework for press freedom and journalist protection, the regulatory architecture for broadcasting and digital media, and the institutional mechanisms for promoting accountability and independence in journalism.

The fate of those recommendations, as of April 2026, is a case study in the structural resistance to reform that characterizes Bangladeshi institutional development. The interim government's

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January 2026 draft ordinance for a National Media Commission, released with only three days for public feedback, drew on some but disregarded many of the MRC's findings. International media freedom organizations, including the IFJ, Article 19, and the Committee to Protect Journalists, characterized the proposed commission as insufficiently independent from government influence, lacking the enforcement mechanisms needed to make its oversight effective, and retaining provisions that could be used to restrict rather than protect editorial independence. The speed and the inadequacy of the consultation process suggested that the ordinance was driven as much by the desire to be seen to be acting on media reform as by genuine commitment to implementing the substance of the MRC's recommendations.

This gap between the reform recommendation and the reform implementation is not, however, a reason for despair about the prospects for institutional change. It is, rather, a specification of the specific political and organizational work that genuine reform requires. The MRC's recommendations do not lose their validity because they were imperfectly implemented. They remain a detailed and evidence-based blueprint for institutional change, and the political coalition that could push for their more complete implementation is a coalition that exists, even if it has not yet achieved sufficient strength or coherence to overcome the structural resistance it faces.

What the MRC's recommendations require, beyond the political will of the government in power, is a sustained campaign of public advocacy, legal challenge, and professional organizing that can change the political calculus within which media policy is made. The international human rights law framework provides important resources for this campaign. Article 19 of the International Covenant on Civil and Political Rights, which Bangladesh ratified in 2000, creates binding international legal obligations regarding freedom of expression that the MRC's full recommendations would bring Bangladesh into compliance with and that the January 2026 draft ordinance partially violated. The UN Human Rights Council's 2025 country review of Bangladesh, in the Universal Periodic Review process, created an additional institutional moment at which international pressure for media reform could be articulated and recorded. The IFJ's October 2025 joint letter with five civil society organizations urging the interim government to strengthen press freedom protection ahead of the elections demonstrated that a coalition of international and domestic advocacy organizations exists and is capable of coordinated action.

78.2 The Structural Requirements of Institutional Independence

The specific institutional reforms that a genuinely independent and professionally capable Bangladeshi science journalism would require can be understood in terms of three mutually reinforcing dimensions: legal protection, economic sustainability, and professional organization. Each dimension is necessary but insufficient on its own; the failure of previous reform efforts can often be traced to the neglect of one or more of these dimensions even when progress was made on the others.

On the legal dimension, the minimum requirements for a functioning free press are well-established in international human rights law and in the comparative experience of countries that

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have successfully built independent journalism institutions. They include: the repeal or fundamental reform of all legislation that criminalizes publication of information in the public interest, including the remaining problematic provisions of the 2025 Cyber Security Ordinance; the repeal of the Official Secrets Act of 1923, which puts restrictions on journalists working on public interest issues that are incompatible with international standards of press freedom; the establishment of a genuinely independent right to information regime with effective enforcement mechanisms; the creation of robust journalist protection legislation that provides legal aid, witness protection, and anti-SLAPP remedies for journalists facing harassment litigation; and the reform of the accreditation system to ensure that accreditation cannot be used as a mechanism of political control over media access.

The specific challenge for science journalists within this legal framework is access to scientific information held by government agencies. The science journalist who wants to report on the government's environmental monitoring data, its food safety inspection records, its epidemiological surveillance data, or its agricultural research results needs not just general press freedom but specific statutory rights of access to scientific information that government agencies systematically resist disclosing. The Right to Information Act of 2009, as this textbook has analyzed, provides a general framework for information access, but its implementation in the domain of scientific and technical information has been inconsistent and frequently frustrated by bureaucratic resistance and institutional opacity. A reformed legal framework for science journalism would include specific provisions strengthening RTI access to scientific data, environmental monitoring records, clinical trial registrations, and regulatory decisions on matters of public health and safety.

On the economic dimension, the structural conditions that make Bangladeshi journalism economically dependent on political and commercial patrons rather than on readers and advertisers are deeply entrenched and will not be dissolved by legal reform alone. The advertising market in Bangladesh is dominated by a small number of large corporations and by government advertising spending, and both of these advertising sources are systematically used to reward friendly coverage and punish critical reporting. The proliferation of media outlets, which as the Dhaka Tribune editor observed at the TIB's December 2025 event, creates a paradox in which licenses are distributed without clear grounds, eroding public trust, has produced a media landscape in which the sheer number of outlets reduces the economic viability of each one and increases their individual dependence on advertising patronage.

The international experience of countries that have addressed these economic structural problems suggests several potentially transferable approaches. The Nordic model of public subsidies to independent newspapers, allocated on the basis of circulation and editorial independence criteria rather than political alignment, has produced a media environment in Norway, Sweden, and Finland that is among the most free and most professionally capable in the world. The German public broadcasting model, in which large, well-funded public broadcasting institutions operate under governance structures that insulate them from both government and commercial influence, provides another model for addressing the economic structural problem. The emergence of reader-funded journalism models, particularly the subscriber-supported investigative journalism platforms that have emerged in a number of countries including the United States, United

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Kingdom, and India, suggests additional possibilities for economic sustainability that are less dependent on advertising or government subsidy.

None of these models can be transplanted intact to the Bangladeshi context without substantial adaptation to local conditions of income levels, media consumption habits, literacy rates, and institutional capacity. But the underlying principle, that journalism whose economic survival depends on the goodwill of political and commercial power cannot be genuinely independent of that power, applies universally. The specific institutional forms through which economic independence can be achieved in Bangladesh are a subject for collaborative deliberation between journalists, editors, media economists, policymakers, and civil society organizations, not a question to which this textbook can or should provide a single definitive answer.

On the professional organization dimension, the development of a genuine, independent, and representative professional community of Bangladeshi journalists is both a precondition for and a product of institutional reform. Professional organizations that are genuinely independent of political control, that enforce meaningful professional standards, that provide economic solidarity and legal support to members facing harassment, and that engage effectively in public advocacy for press freedom and institutional reform are not luxuries that the journalistic profession can defer until better conditions obtain. They are conditions of their own creation: institutions that must exist in order to help create the conditions of their existence.

The specific challenge of professional organization in the Bangladeshi context is the extraordinary fragmentation and politicization of the existing journalist organizations. As this textbook has documented in earlier parts, Bangladeshi journalist unions have historically been organized along political party lines, with affiliates of the major parties each maintaining their own journalist organizations, creating a situation in which the professional solidarity of journalists is subordinated to the political loyalties that divide them. The development of a genuinely non-partisan professional organization capable of representing the interests of journalists across political divisions is not simply an organizational task: it is a cultural and political transformation that requires the deliberate cultivation of a professional identity that is distinct from and takes precedence over political identity.

78.3 The Science Journalism Institutional Infrastructure

Within the broader landscape of Bangladeshi media reform, the specific institutional requirements of science journalism represent a distinct and partially independent set of challenges. The general preconditions for free and independent journalism, legal protection, economic sustainability, and professional organization, are necessary but not sufficient for science journalism. Science journalism requires additional institutional investments that the general journalism reform conversation frequently overlooks.

The first of these additional requirements is the development of a scientific advisory infrastructure that gives journalists rapid and reliable access to expert evaluation of scientific claims. The science journalist who receives a press release from a pharmaceutical company claiming that a new drug has shown "significant results in clinical trials" needs immediate access

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to someone who can explain what clinical trial design would make that claim meaningful, what confounds the results might have, what peer-reviewed research would be needed to validate the claim, and what the limitations of the study described in the press release are. The science journalist who wants to report on a government environmental impact assessment needs access to someone who can evaluate whether the assessment's methodology is sound, whether its data sources are reliable, and whether its conclusions are justified by its evidence. In the absence of a systematic scientific advisory infrastructure, the science journalist who has neither the time nor the technical training to do this evaluation herself is effectively dependent on the institutional authority of whoever issued the press release or conducted the assessment, which is precisely the situation that critical science journalism must avoid.

Several models for scientific advisory infrastructure are worth examining in the Bangladeshi context. The Science Media Centre model, first developed in the United Kingdom and subsequently replicated in Australia, New Zealand, Germany, and other countries, provides rapid response expert commentary to journalists on breaking science stories. The basic model involves a centrally coordinated database of scientists who have agreed to be available for journalist inquiries, combined with editorial staff who can identify appropriate experts quickly and facilitate contact between journalists and scientists. The Science Media Centre does not itself produce journalism: it facilitates the journalist's access to the scientific expertise needed to evaluate claims and produce accurate reporting.

A Bangladeshi science advisory infrastructure would need to be adapted to local conditions in several important respects. The relative scarcity of Bangladeshi scientists with the communication skills and the institutional permission to speak candidly to journalists about matters that touch on government policy or commercial interests means that a purely domestic expert pool would be insufficient for many important science stories. A hybrid model, combining domestic scientists with international experts who have Bangladesh-relevant expertise, would be more effective. The institutional independence of the advisory infrastructure from both government and commercial interests is essential: an advisory system that is funded by or formally affiliated with government research institutions or commercial sponsors cannot provide the genuinely independent expert perspective that science journalism needs.

The second additional requirement is laboratory testing capacity for investigative science journalism. Some of the most important science stories in Bangladesh, including stories about food adulteration, water contamination, pharmaceutical product quality, and industrial chemical pollution, require the journalist to obtain actual physical samples and have them analyzed by qualified laboratories. The journalism that documented the extent of formalin use in fish preservation in Bangladesh, for instance, was only possible because journalists had access to laboratory testing that could confirm the presence and concentration of formalin in specific samples. The journalism that documented arsenic contamination in drinking water was only possible because samples could be independently tested. This kind of evidence-based investigative science journalism requires either direct access to laboratory facilities or formal partnerships with independent laboratories that can provide reliable testing services on terms that protect the journalist's editorial independence.

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The development of laboratory testing capacity specifically oriented toward journalism investigation is a rare and expensive institutional investment, and it is one that no single Bangladeshi news organization could sustain independently. It is, however, exactly the kind of shared institutional infrastructure that a collaborative science journalism model, of the kind discussed in Chapter 76 of Part Eight, could provide. A shared investigative infrastructure organization, modeled on organizations like ProPublica in the United States or the Organized Crime and Corruption Reporting Project, but adapted to the specific needs and contexts of Bangladeshi science journalism, could provide laboratory testing capacity, data analysis tools, legal support, and scientific advisory services as shared resources available to multiple news organizations and individual journalists.

The third additional requirement is a systematic program of science communication training integrated into the broader journalism education and professional development infrastructure. The science journalist who lacks the technical literacy to evaluate a clinical trial design, to understand the significance of a confidence interval, to assess the validity of a regression model's causal inference, or to recognize the difference between a peer-reviewed research article and a conference abstract cannot perform her critical and investigative functions regardless of how much institutional support she has. The development of this technical literacy requires a sustained educational investment that begins in journalism school and continues throughout the professional career.

Chapter Seventy-Nine: The Educational Imperative - Building the Next Generation of Bangladeshi Science Journalists

79.1 The Current State of Journalism Education in Bangladesh

The education of journalists in Bangladesh occurs within a system that reflects, in concentrated form, the structural limitations that this textbook has analyzed throughout the preceding parts. The journalism departments of Bangladeshi universities, including the prestigious departments at the University of Dhaka, at Jahangirnagar University, at Rajshahi University, and at a number of newer private universities, face a convergence of challenges that severely constrain their capacity to produce graduates with the knowledge, the skills, and the critical sensibility that quality science journalism requires.

The curriculum challenge is fundamental. Journalism curricula in Bangladesh have been slow to incorporate the scientific literacy, the data skills, and the critical philosophy of science that contemporary science journalism demands. Many programs still operate within a model of journalism education that emphasizes news writing, interviewing technique, and the ethics of attribution and source protection without engaging seriously with the epistemological, political, and institutional dimensions of journalism's relationship to scientific knowledge. Students who graduate from these programs may be competent general journalists but will be ill-equipped for the specific demands of science journalism.

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The faculty challenge compounds the curriculum challenge. Journalism faculty in Bangladesh are predominantly trained in journalism and communication studies, not in science, and most lack the scientific literacy that would allow them to teach science journalism with genuine depth. Conversely, scientists who might provide scientific depth are rarely trained in journalism pedagogy or in the critical analysis of media practice. The interdisciplinary faculty collaboration that genuinely effective science journalism education requires, bringing together journalistic and scientific expertise in sustained dialogue, is rare in Bangladeshi universities.

The institutional culture challenge is equally significant. Bangladeshi universities operate within a broader academic culture that, as this textbook has documented in its discussion of the relationship between scientific institutions and political power, is subject to substantial political influence. Academic freedom, in the specific sense of the freedom to teach and publish critical analysis of government policy, institutional performance, and scientific authority, is imperfectly protected in Bangladeshi universities. The journalism educator who wants to teach critical science journalism in the full sense that this textbook advocates, including critical analysis of government scientific claims, investigative approaches to institutional accountability, and the philosophical foundations for challenging manufactured scientific consensus, does so within an institutional environment that does not fully protect her from the consequences of that teaching.

The resources challenge is both material and non-material. Material resource constraints, including inadequate laboratory facilities, limited library access to international scientific journals, and insufficient access to the digital tools and data analysis software that contemporary journalism requires, are severe. Non-material resource constraints, including the limited network connections to international science journalism organizations and the limited access to mentorship from experienced science journalists, are equally constraining.

79.2 A Curriculum for the Future: What Science Journalism Education Should Encompass

Designing a curriculum for science journalism education in Bangladesh is not simply a matter of listing topics to be covered. It is a matter of articulating a philosophy of professional formation that defines not just what science journalists should know but what kind of person, in the professional and ethical sense, they should aspire to become. This textbook has argued throughout for a vision of the science journalist as a combination of translator, critic, and witness: someone who can make technical knowledge accessible, who can evaluate the institutions and interests behind knowledge claims, and who can bear authentic testimony to the human consequences of scientific developments and institutional failures.

A curriculum built around this vision of professional identity would need to encompass at least six substantive domains, each of which deserves serious and sustained academic treatment rather than superficial coverage.

The first domain is the philosophy and history of science. The science journalist who does not understand why the history of science is a history of controversy, revision, and paradigm shift, who does not appreciate the difference between the progressive narrative of science as the steady accumulation of knowledge and the more complex reality of science as a social practice shaped

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by institutional interests, cultural assumptions, and political pressures, will be systematically vulnerable to accepting the authority claims of scientific institutions at face value. The philosophy of science curriculum in a science journalism program should not be a compressed survey of Popper, Kuhn, Lakatos, and Feyerabend: it should be a sustained engagement with the epistemological questions that are directly relevant to journalistic practice, including the criteria for distinguishing genuine from manufactured scientific uncertainty, the role of peer review and replication in evaluating scientific claims, the ways in which funding and institutional interests shape research priorities and conclusions, and the specific epistemological challenges of reporting on probabilistic risk, on complex systems, and on the relationship between statistical inference and causal explanation.

The second domain is the political economy of science and technology. The science journalist who does not understand how science is funded, how research priorities are set, who benefits from and who is harmed by specific patterns of scientific investment, and how commercial and political interests shape the production and communication of scientific knowledge will be unable to perform her critical function. This domain should encompass the economics of the pharmaceutical and agricultural biotechnology industries, the sociology of scientific communities and their resistance to paradigm challenges, the political economy of climate science and climate denial, the governance of international scientific institutions, and the specific institutional landscape of science funding and research governance in Bangladesh.

The third domain is quantitative literacy and data analysis. The contemporary science journalist must be able to read, evaluate, and communicate about statistical evidence with a level of sophistication that goes substantially beyond what general journalism education typically provides. This does not mean that science journalists must be statisticians. It means that they must understand the concepts of statistical significance, confidence intervals, effect sizes, and relative versus absolute risk well enough to recognize when claims based on statistics are misleading. It means they must understand enough about study design, including the hierarchy of evidence from randomized controlled trials to observational studies to case reports, to evaluate the evidentiary status of specific claims. It means they must be able to work with data sets using basic computational tools, to recognize patterns in data, to identify outliers and anomalies that might be the seeds of investigative stories, and to present quantitative information in forms that are accessible to non-specialist readers without being misleading.

The fourth domain is environmental and public health science. Given the specific scientific challenges facing Bangladesh, deep familiarity with the science of climate change, environmental pollution, epidemiology, and public health is not optional for Bangladeshi science journalists. This does not require the full depth of graduate-level training in these sciences, but it requires substantially more than the superficial familiarity with scientific vocabulary that general journalism education typically provides. A science journalism curriculum should include dedicated modules in climate science, toxicology, infectious disease epidemiology, and environmental health, taught at a level that enables the journalist to read and evaluate primary scientific literature in these areas, to understand the methodological debates within these scientific communities, and to identify the key research questions and institutional actors in each domain.

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The fifth domain is investigative methodology. The particular methods of investigative journalism, including document analysis, data analysis, source development, freedom of information requests, undercover reporting, and cross-border collaborative investigation, require specific training and practice. The science journalist's application of these methods has specific features that distinguish it from general investigative journalism: the need to evaluate the reliability of scientific documents and data, the specific challenge of developing sources within scientific institutions that are subject to both political and professional pressures toward silence, and the additional ethical complexities that arise when investigating scientific misconduct, research fraud, or institutional failure.

The sixth domain is ethics, law, and professional identity. The science journalist's ethical obligations are not identical to those of the general journalist, though they share a common foundation. The specific ethical challenges of science journalism, including the obligation to represent scientific uncertainty honestly even when simplification would be more compelling, the challenge of balancing the public interest in knowing about scientific developments with the risk of generating unwarranted public alarm, the specific conflicts of interest that arise from journalists' dependence on scientists as sources and scientists' interests in positive media coverage, and the particular complexities of reporting on science that bears directly on the life and death of specific individuals and communities, deserve sustained ethical analysis as part of professional formation.

79.3 Pedagogical Philosophy: How Science Journalism Should Be Taught

The what of science journalism education is inseparable from the how. A pedagogical philosophy that treats science journalism education as primarily a matter of content transmission, of filling students' heads with information about scientific methods, media law, and professional ethics, is fundamentally inadequate to the kind of professional formation that this textbook argues for. The science journalist's characteristic competencies, including the capacity for independent critical judgment, the courage to challenge institutional authority, the ability to hold complex and contradictory information simultaneously, and the emotional and ethical resilience needed to sustain principled journalism under conditions of professional risk, cannot be transmitted. They must be cultivated, through practice, through challenge, and through sustained reflection on experience.

The deliberative pedagogy that has emerged from the intersection of deliberative democratic theory and education theory offers some important resources for thinking about how to cultivate these competencies. As the theoretical literature on education for deliberative democracy has developed in the 2020s, drawing on contributions from Englund, Fishkin, and their successors, it has emphasized the importance of genuine engagement with perspectives that challenge one's own, of authentic uncertainty about outcomes, and of the development of communicative and deliberative capacities through practice rather than instruction. These emphases translate directly into a pedagogy for science journalism that is organized around authentic journalistic projects, genuine engagement with scientific controversy, and reflective analysis of the specific challenges that each project presents.

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The clinic model, in which journalism students do real journalism under the supervision of experienced journalist-educators, is particularly well-suited to science journalism education. The science journalism clinic provides students with the experience of navigating real uncertainty, real institutional resistance, and real ethical complexity, in a context where the educational supervisor can provide guidance, challenge assumptions, and help students develop the metacognitive awareness, the ability to reflect on and learn from their own journalistic practice, that professional maturity requires. The specific challenges of Bangladeshi science journalism, including the specific legal risks, the specific patterns of institutional resistance, and the specific cultural sensitivities that shape what can be reported and how, are best learned through supervised practice in real Bangladeshi journalistic contexts, not through the study of international textbooks and case studies that, however valuable as theoretical resources, cannot substitute for direct experience.

The deliberative dimension of pedagogy is equally important. The science journalism student who has never seriously engaged with perspectives that challenge her own assumptions about the credibility of official science, the reliability of international research, the relevance of traditional ecological knowledge, or the appropriate relationship between journalistic and scientific authority will be professionally vulnerable when she encounters those perspectives in the field. Deliberative pedagogy creates structured opportunities for exactly this kind of perspective-challenging engagement, through seminars that bring together scientists, policymakers, community advocates, and journalists in structured dialogue, through role-playing exercises that require students to argue for positions they do not hold, and through critical reading of journalism that exemplifies different models of the science journalist's relationship to authority and to the public.

79.4 The International Dimension of Science Journalism Education in Bangladesh

The previous parts of this textbook have analyzed extensively the complex and ambivalent relationship between Bangladeshi journalism's international connections and its domestic independence. International journalism education programs, fellowships, and training initiatives have provided genuinely valuable experiences of professional development for a generation of Bangladeshi science journalists, while also importing professional frameworks, research agendas, and editorial values that may not always be appropriate to the Bangladeshi context. The challenge for the educational system is to enable Bangladeshi science journalists to benefit from international professional connections, to access the best of international science journalism theory and practice, and to participate in the global science journalism conversation as genuine equals, while simultaneously maintaining the critical awareness of the power differentials that shape international science journalism relationships and the independent professional identity that genuine Bangladeshi science journalism requires.

This challenge has a specific institutional form. The international journalism fellowships, including programs run by the International Center for Journalists, the Reuters Institute for the Study of Journalism, the WFSJ, and others, tend to select fellows on the basis of criteria that favor journalists who already have the international connections, the English-language skills, and the professional track record needed to succeed in competitive international selection processes.

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This creates a self-reinforcing pattern in which the journalists who are most connected to the international science journalism community are those who are already most professionally advantaged, while the journalists who most need exposure to international professional standards and international scientific knowledge, including those working in smaller regional media organizations, in Bangla-language print and broadcast media, and in rural journalistic contexts, are least likely to benefit from international fellowship programs.

A more equitable approach to international capacity building in Bangladeshi science journalism would involve a systematic effort to extend the reach of international connections beyond the established cohort of Dhaka-based, English-proficient science journalists. This would require, among other things, the development of Bangla-language science journalism training materials of comparable quality to the best English-language materials available; the creation of mentorship relationships that connect experienced international science journalists with less well-connected Bangladeshi colleagues; the development of regional science journalism training programs that bring international resources to journalists working outside Dhaka; and the systematic translation and contextualization of international science journalism case studies into Bangladeshi contexts so that they can serve as effective pedagogical resources for students and journalists who do not have direct access to international professional networks.

Chapter Eighty: Artificial Intelligence, Digital Transformation, and the Future of Science Journalism Practice

80.1 The AI Revolution and Its Specific Implications for Science Journalism

The rapid development and deployment of artificial intelligence systems in the period since 2022, and particularly the dramatic capabilities expansion represented by large language models since the release of GPT-4 and its successors, has created a set of challenges and opportunities for journalism in general and for science journalism in particular that are sufficiently novel and sufficiently consequential to deserve extended analysis in any forward-looking treatment of the profession.

The challenges are multiple and serious. The most immediately apparent challenge is the use of AI systems to generate synthetic scientific content, including fake research papers, fabricated expert citations, and scientifically plausible but factually false claims about the results of studies that were never conducted. The science journalist who relies on the superficial credibility of apparently peer-reviewed research without independently verifying the existence and validity of the studies cited, the institutions affiliated, and the experts quoted is vulnerable to being deceived by AI-generated scientific misinformation in ways that were not previously possible. The specific risk in the Bangladeshi context is the use of AI-generated scientific content to manufacture apparent scientific support for commercial products, for government policy claims, or for the dismissal of genuine scientific concerns about environmental or public health issues.

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The second challenge is the use of AI-powered content generation to produce large volumes of superficially plausible science journalism at very low cost, flooding the information environment with low-quality science content that competes with and crowds out genuinely investigative and analytically serious science reporting. This challenge is related to the broader problem of platform economics that this textbook has analyzed in the context of digital transformation: if low-cost AI-generated science content can achieve comparable or higher engagement metrics than high-cost investigatively rigorous science journalism, the economic model for genuinely serious science journalism becomes even more precarious than it already is.

The third challenge is the use of AI systems for surveillance and censorship of journalists. Bangladesh's Draft National Artificial Intelligence Policy of 2024, which Article 19 characterized as enabling "excessive surveillance, content regulation, and potential algorithmic biases that could suppress dissent and independent journalism," represented an early official engagement with AI governance whose implications for science journalism were deeply concerning. AI-powered surveillance systems, including systems that can automatically identify and flag critical reporting on government policy, can monitor journalists' digital communications, and can map journalists' source networks through analysis of digital contact patterns, represent a qualitative extension of the state's capacity to suppress journalism that is particularly relevant to investigative science journalism, where the development of confidential sources within scientific institutions is essential to the investigative function.

Against these challenges must be set a set of genuine opportunities that AI technology creates for science journalism practice. The most significant is the enhancement of data journalism capabilities. AI-powered data analysis tools can enable science journalists to process and analyze data sets that would previously have required the skills of a professional statistician to interpret meaningfully. The ability to identify patterns in large datasets, to map relationships between variables, to detect anomalies that might indicate regulatory failures or institutional misconduct, and to produce accessible visualizations of complex quantitative information is substantially enhanced by AI tools that are becoming increasingly accessible to journalists without specialist data science training.

The second opportunity is the enhancement of research and fact-checking capabilities. AI-powered literature search and synthesis tools can dramatically reduce the time required for a science journalist to survey the existing research landscape on a specific topic, to identify the key empirical debates in a scientific field, and to check the consistency of specific claims against the broader body of published research. The science journalist who previously might have spent days or weeks surveying scientific literature to prepare for an interview with a researcher or to evaluate a specific scientific claim can now compress much of that preliminary research into hours, freeing time for the irreplaceable human elements of science journalism: the cultivation of sources, the observation of social and physical realities, and the exercise of the critical judgment that the translation between technical and public discourse requires.

The third opportunity is the enhancement of translation and accessibility. AI-powered translation tools are rapidly improving in quality and are already beginning to dissolve some of the barriers that separate the Bangla-language science journalism audience from the international scientific

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literature that is predominantly published in English. While AI translation is not yet adequate to replace human translation in contexts where nuance and precision are essential, it can provide the science journalist with a rapid preliminary understanding of a scientific paper published in English or another language, which she can then refine through consultation with bilingual scientific experts.

80.2 The Ethics of AI-Assisted Science Journalism

The use of AI tools in journalism practice raises ethical questions that are serious, genuinely novel in some respects, and only beginning to be systematically addressed in the professional ethics literature. The core ethical issue is the relationship between AI assistance and the journalistic claims to authenticity, independent judgment, and original investigation that constitute the basis of journalism's social authority.

The science journalist who uses an AI tool to help identify patterns in a large dataset is doing something that is ethically similar to using a calculator to check arithmetic: the AI is doing a mechanical task that would otherwise require more time and is prone to human error, and the journalist is still responsible for interpreting the results, verifying their significance, and making editorial judgments about what they mean and how they should be reported. The science journalist who uses an AI tool to generate a first draft of a scientific explanation, which she then revises and verifies against primary sources, is doing something that is ethically more complex, raising questions about whose intellectual labor the resulting text represents and whether the transparency obligations of journalism require disclosure of AI assistance. The science journalist who uses an AI tool to generate quotations, invents sources, or produces scientific claims that she has not independently verified is doing something that is straightforwardly unethical, irrespective of the AI mediation, because it violates the core journalistic obligations of truth and accuracy.

The professional ethics infrastructure for Bangladeshi science journalism needs to develop clear and principled guidelines for AI use that distinguish between these different uses, that require appropriate transparency, and that maintain the core ethical principles of journalistic practice, accuracy, independence, fairness, and accountability, in the face of tools that can make unethical shortcuts much easier and much harder to detect. The development of these guidelines should be a collaborative project of the professional journalism community, drawing on the emerging international literature on AI journalism ethics and adapting it to the specific conditions and vulnerabilities of the Bangladeshi journalistic environment.

80.3 Platform Governance and the Science Information Ecosystem

The governance of the social media platforms through which an increasing proportion of Bangladeshis receive their science information is a policy domain of enormous importance for the future of science journalism and one in which Bangladesh has historically had very limited influence. The major platforms, including Facebook, YouTube, TikTok, and their successors, are governed primarily by the policy decisions of their corporate headquarters in the United States and, in the case of TikTok, in China, with minimal consultation with the users, civil society

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organizations, or governments of the Global South countries that represent a majority of their user base.

The specific ways in which platform algorithms shape the science information environment in Bangladesh deserve sustained investigative attention from science journalists. The algorithmically amplified misinformation about COVID-19 vaccines that reached hundreds of millions of people globally, including large numbers of Bangladeshis, through Facebook's recommendation systems in 2020 and 2021, caused measurable public health harm. The algorithmic amplification of climate denial and climate doubt content by platforms optimized for engagement has been documented in multiple international studies. The specific ways in which these dynamics play out in the Bangladeshi information environment, including the role of local and regional language content, the specific community structures that shape information spread, and the relative influence of formal and informal information channels, is a subject that Bangladeshi science journalists are better positioned to investigate than international researchers, and one whose investigation is urgently needed.

The emerging international regulatory frameworks for platform governance, including the European Union's Digital Services Act and the various platform accountability proposals advanced in the United States and United Kingdom, provide important comparative models for thinking about what kinds of platform governance would be in Bangladesh's public interest. The Bangladesh Science Journalism community, organized through professional associations and in dialogue with civil society organizations and academic researchers, could play an important role in Bangladesh's engagement with platform governance questions at both the domestic and international levels.

Chapter Eighty-One: The Philosophical Foundation for Future Practice - Toward a Mature Theory of Bangladeshi Science Journalism

81.1 Revisiting the Epistemological Foundations

The preceding chapters of this Part have focused primarily on institutional, educational, and technological dimensions of the future of Bangladeshi science journalism. This chapter returns to the philosophical foundations that this textbook has argued throughout must underpin any genuinely serious and critically self-aware science journalism practice. The argument is not that philosophy can solve the institutional and political problems that constrain science journalism in Bangladesh. It cannot. But the absence of a philosophically coherent and consistently held conception of what science journalism is for, what knowledge it is responsible for producing and communicating, and what its relationship to democratic life should be, leaves the profession vulnerable to intellectual incoherence and ethical drift that compounds the institutional and political vulnerabilities it already faces.

The epistemological questions that Bangladeshi science journalism must grapple with in its future development can be organized around three fundamental tensions. The first is the tension

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between the universality claims of scientific knowledge and the situatedness of scientific production and communication in specific social, political, and cultural contexts. The second is the tension between the necessity of epistemic authority, the need for some institutions and processes to be recognized as more reliable producers of knowledge than others, and the historical and contemporary track record of that authority being misused, captured by powerful interests, or corrupted by institutional dysfunction. The third is the tension between the demand for accessible simplicity in science communication, which is essential for genuinely democratic science journalism, and the genuine complexity of most important scientific questions, which resists simplification without distortion.

On the first tension, the critical theory tradition associated with scholars including Donna Haraway, Sandra Harding, and Bruno Latour has developed powerful arguments that scientific knowledge is always produced from a particular standpoint, in a particular institutional and cultural context, and that the universality claims of science are partly ideological, obscuring the specific interests and perspectives from which scientific knowledge is generated. The implications for science journalism of taking these arguments seriously, without collapsing into a radical relativism that denies the existence of better and worse-evidenced scientific claims, are complex but important. They suggest that the science journalist must always ask not just what the science says but from where the science is speaking, in whose interests, through what institutional mechanisms, and with what blind spots created by its social and cultural location.

In the Bangladeshi context, this critical standpoint analysis has specific and important applications. The body of scientific knowledge most relevant to Bangladesh's situation, including the knowledge about climate change impacts, about tropical disease epidemiology, about arsenic toxicology, and about the agronomic conditions of the Bengal delta, has been produced predominantly in Northern institutions with Northern funding and predominantly Northern research personnel, even when it concerns Southern populations and territories. This is not simply a problem of bias: it is a problem of research priorities, of the kinds of questions that get asked and the kinds of questions that remain unasked, of the interpretation frameworks that are applied to data, and of the practical recommendations that follow from the research. The science journalist who is aware of this production context will ask questions that the straightforward transmission of Northern scientific findings would not prompt.

On the second tension, the approach this textbook advocates can be described as critical institutionalism: a position that neither defers uncritically to scientific authority nor dismisses the genuine epistemic value of the institutional processes through which scientific knowledge is produced. Critical institutionalism recognizes that peer review, replication, and the methodological standards of scientific communities provide real, if imperfect, safeguards against the production of false or misleading knowledge claims. It recognizes that the authority of scientific expertise is, in general and on average, better founded than the authority of intuition, tradition, or political preference on most empirical questions. But it also recognizes that this general epistemic advantage of scientific institutions does not translate into a blanket entitlement to deference on specific questions in specific institutional contexts. The critical institutionalist science journalist evaluates the specific institutional context of specific scientific claims, asking about independence from commercial and political interests, about the transparency of methods

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and data, about the track record of the institution making the claim, and about the coherence of the claim with the broader body of evidence, rather than simply accepting or rejecting institutional scientific authority in the abstract.

On the third tension, the tension between accessibility and complexity, the most important theoretical resource is the pragmatist tradition in philosophy of communication, particularly the work of John Dewey and his contemporary interpreters. Dewey's argument that effective democratic communication is not a matter of simplification but of translation, of finding the connections between complex ideas and the concrete experiences and practical concerns of specific communities, suggests a model for science journalism that is neither patronizing in its assumption that non-specialist audiences cannot handle complexity nor scholastically self-indulgent in its prioritization of technical precision over practical accessibility. The science journalist who can find the lived experiential connections that make abstract scientific ideas concrete, without sacrificing the precision that makes them true, is doing something that Dewey would recognize as the ideal of democratic communication.

81.2 Jurisprudential Dimensions of the Future Science Journalism Framework

The jurisprudential dimensions of science journalism's future in Bangladesh deserve extended analysis that goes beyond the legal reform agenda discussed in Chapter 78. Jurisprudence, in the rich philosophical sense of the discipline, is not merely the study of what the law is but the study of what the law should be, of the normative foundations of legal obligation, and of the relationship between law, justice, and political authority. The science journalist who operates within a legal framework that is imperfect, that contains provisions that violate international human rights standards, and that is subject to political manipulation, needs not just a practical understanding of what the law currently requires but a jurisprudential understanding of what the law should require and what principles should guide the contestation and reform of existing legal provisions.

The natural law tradition in jurisprudence, associated with theorists from Aquinas through Finnis and Dworkin, holds that positive law, the law that actually exists in specific legal systems, derives its binding character from its conformity with a more fundamental moral law that can be discovered through reason. In this tradition, an unjust law is not merely a bad law that ought to be changed: it lacks the moral authority that would otherwise make legal obligation binding. The science journalist who is prosecuted under a law that violates international human rights standards, who is arrested under a provision that criminalizes the publication of truthful information in the public interest, can understand her situation within the natural law tradition as one in which the legal instrument being used against her lacks the moral legitimacy that would make compliance with it a genuine moral obligation.

The positivist tradition in jurisprudence, associated with theorists from Bentham and Austin through Hart and Raz, holds that the existence and content of law are determined by social facts, not by its moral merits. In this tradition, the identification of what the law requires is logically separate from the evaluation of whether what it requires is just. The science journalist who uses the tools of legal positivism is not abandoning moral commitment: she is engaging in a

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pragmatic analysis of what the existing legal framework actually requires, as a foundation for understanding where the gaps and inconsistencies in that framework create spaces for advocacy and legal challenge.

The critical legal studies tradition, which emerged in the American academy in the 1970s and has subsequently influenced legal scholarship globally, argues that law is not a neutral framework for the resolution of disputes but an ideological apparatus that systematically serves the interests of dominant social groups and legitimizes existing distributions of power. The implications of this tradition for understanding the legal framework of science journalism in Bangladesh are both illuminating and troubling. They are illuminating because they help explain patterns that a purely formal analysis of legal text cannot account for: why the law that is formally neutral in its application tends to be enforced selectively against journalists who challenge power rather than against institutions that restrict the public's access to information; why legal procedures designed for the protection of citizens tend to become instruments of harassment when powerful interests deploy them against journalists; and why the formal availability of legal remedies for press freedom violations does not translate automatically into practical protection for journalists in countries where the independence of the judiciary is imperfect.

The emerging framework of epistemic justice, developed by Miranda Fricker and subsequently extended by José Medina and others, offers a particularly relevant jurisprudential resource for thinking about the future of science journalism in Bangladesh. Fricker's distinction between testimonial injustice, the systematic undervaluing of the testimonial authority of speakers from marginalized groups, and hermeneutical injustice, the inadequacy of interpretive frameworks for understanding the experiences of marginalized people, translates directly into the science journalism context. The testimonial injustice that occurs when community members' knowledge of their own environmental exposures is systematically discounted in favor of official scientific assessments is not merely an epistemological failure: it is an injustice, in the specific sense that it harms the wronged person in their capacity as a knower and deprives them of the social recognition that their knowledge deserves. The science journalist who documents and amplifies marginalized communities' knowledge claims against institutionally powerful dismissals is performing a jurisprudentially significant act of testimonial justice.

81.3 The Political Theory of Science Journalism: Between Liberalism and Radical Democracy

The political theory underlying this textbook's vision of science journalism can be characterized as a form of deliberative democratic radicalism: a position that draws on the liberal democratic tradition's commitment to free expression, epistemic pluralism, and institutional accountability while insisting on a more radical understanding of democratic participation that includes the epistemic claims of marginalized communities, challenges the systematic exclusions of existing deliberative institutions, and refuses to accept the appearance of democratic process as an adequate substitute for the reality of democratic power.

The liberal democratic tradition, associated with theorists from Mill through Rawls and Habermas, provides the foundation for the core commitments of journalism as a democratic

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institution: the commitment to free expression as both an intrinsic right and an instrumental necessity for democratic governance; the commitment to institutional accountability as the mechanism through which citizens can hold power to account; and the commitment to epistemic openness, to the idea that the democratic public sphere should be organized on the basis of reasoned argument and empirical evidence rather than authority or tradition. These commitments provide the normative foundation for the science journalist's claim to special social importance: the claim that her work, by making scientific knowledge accessible and scientific institutions accountable, performs an indispensable function for democratic self-governance.

The radical democratic tradition, associated with theorists from Mouffe and Laclau through Fraser and Young, presses beyond these liberal commitments in ways that are specifically relevant to the Bangladeshi context. Radical democratic theory insists that the formal institutions of liberal democracy, including the free press, are insufficient for genuine democratic participation if they fail to address the structural inequalities of economic power, cultural recognition, and political voice that shape who can actually participate in the democratic public sphere and on what terms. In Bangladesh, these structural inequalities are severe, and they take specific forms that include class inequality in access to literacy and information, gender inequality in access to journalism as a profession and in the representation of women's perspectives in science reporting, geographic inequality between Dhaka and the rest of the country, and epistemic inequality between the institutionally recognized forms of scientific knowledge and the lay and traditional forms of knowledge that many communities possess.

The science journalist who operates within a radical democratic framework does not simply report on what the established scientific institutions have found and make it accessible to the public. She actively seeks to amplify the epistemic claims of communities whose knowledge is systematically undervalued, to challenge the institutional hierarchies that determine whose science gets done and whose concerns drive the research agenda, and to connect the specific findings of scientific research to the broader political structures that determine whether those findings translate into improved conditions for the people whose lives they concern.

This is, it must be acknowledged, a demanding and in some ways a controversial vision of the science journalist's role. It moves the science journalist from the position of neutral translator, which some professional traditions regard as the appropriate stance, toward a position of engaged advocacy for epistemic justice. The objection that this advocacy position compromises the journalist's credibility and introduces a form of bias that undermines her authority as a communicator of facts is not trivial. It deserves a serious response.

The serious response begins with the observation that the position of neutral translator is never actually available to the science journalist in practice, even if it is available in theory. The choices that the science journalist makes about which scientific findings to report and which to ignore, which institutional sources to consult and which to discount, which community voices to include and which to exclude, and how to frame the relationship between technical knowledge and practical consequence are never neutral choices. They reflect assumptions about whose knowledge counts, whose interests matter, and what kind of accountability matters. The pretense of neutrality obscures these choices rather than eliminating them, and in doing so it

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systematically disadvantages the perspectives and interests of those who are already least represented in the institutional structures that the pretense of neutrality defaults to.

The engaged democratic science journalist does not abandon accuracy or honesty. She does not report false things in the interests of the communities she is trying to amplify. She does not distort scientific findings to serve political agendas. But she brings to her choices about what to investigate, whom to include, and how to frame the implications of scientific findings a deliberate and transparent commitment to the epistemic claims of those whose knowledge and interests are systematically undervalued by the existing distribution of scientific and media power. This transparency about her normative commitments, rather than the pretense of their absence, is what honesty requires.

Chapter Eighty-Two: The Vision of Maturity - What Excellent Bangladeshi Science Journalism Could Look Like

82.1 Imagining the Possible

The exercise of imagining what excellent Bangladeshi science journalism could look like in a genuinely reformed institutional environment is not idle speculation. It is a necessary contribution to the political and professional project of building that excellence, because people and institutions rarely achieve what they have not imagined as possible. The vision of the possible serves as a normative horizon against which current practice can be measured and toward which reform efforts can be oriented.

The vision must be realistic about the constraints within which Bangladeshi journalism operates and about the time scales required for genuine institutional transformation. It is not a vision of Bangladeshi science journalism in five years, in anything like the current institutional environment. It is a vision of what Bangladeshi science journalism could look like in fifteen or twenty years if the right combination of institutional reform, educational investment, professional organization, and political conditions were achieved, conditions that are genuinely possible even if not guaranteed.

In this vision, Bangladeshi science journalism is characterized by several distinctive features that distinguish it from its current condition and, arguably, from the practices of science journalism in much of the world.

The first distinctive feature is depth of contextual knowledge. The best science journalists in mature Bangladeshi science journalism have spent years developing deep knowledge of the specific scientific and social landscapes they cover. The climate journalist knows not just the general findings of climate science but the specific hydrology of the delta systems she covers, the specific adaptive strategies that communities in different parts of the country have developed, the specific failures of policy implementation that she has documented over years of reporting, and the specific individuals within scientific institutions, government agencies, and civil society

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organizations who are most knowledgeable, most candid, and most trustworthy. This depth of contextual knowledge, accumulated over years rather than months, gives her reporting a quality of insight and accountability that no amount of general science literacy can substitute for.

The second distinctive feature is institutional courage. The excellent science journalist in mature Bangladeshi science journalism does not avoid the stories that powerful interests prefer not to have told. She has the institutional support, the legal protection, the professional community solidarity, and the personal formation to take on the difficult stories: the stories of regulatory failure, of scientific misconduct, of commercial manipulation of scientific evidence, and of the systematic exclusion of marginalized communities from the scientific and policy processes that determine their conditions of life. This institutional courage is not recklessness: it is courage embedded in careful investigation, in accurate and fair reporting, and in the sustained professional relationships that make it possible to return to a beat over time and to develop the institutional accountability that depends on that sustained return.

The third distinctive feature is genuine scientific literacy. The excellent science journalist in mature Bangladeshi science journalism can read a clinical trial paper and identify its methodological limitations. She can understand the significance of a confidence interval and the difference between statistical significance and clinical significance. She can evaluate the plausibility of a mechanistic scientific claim against the broader body of knowledge in the relevant field. She can recognize the difference between a peer-reviewed publication and a press release, between a scientific consensus and a manufactured controversy, and between a genuine expert and a credentialed spokesperson for commercial interests. This scientific literacy does not make her a scientist: it makes her a sophisticated and critical interlocutor with scientists, capable of challenging, contextualizing, and evaluating the knowledge claims she communicates.

The fourth distinctive feature is what might be called epistemic hospitality: the active disposition to take seriously forms of knowledge that institutional scientific authority tends to dismiss or overlook. The excellent Bangladeshi science journalist treats the knowledge of a Haor community about the changing patterns of fish populations in their wetlands with the same serious attention she brings to the peer-reviewed paper about fish population dynamics in a scientific journal. She does not assume that institutional scientific authority automatically trumps local ecological knowledge, nor does she assume the reverse. She is genuinely curious about both, genuinely willing to be surprised by what she learns, and genuinely committed to finding ways to put different forms of knowledge into productive conversation rather than assuming that one automatically trumps the other.

The fifth distinctive feature is communicative ambition that matches technical sophistication. The excellent science journalist in mature Bangladeshi science journalism does not treat accessibility as a constraint on accuracy or as a concession to audience incompetence. She treats it as an artistic and intellectual challenge: how to find the human story, the lived experience, the concrete consequence, and the practical implication that makes complex scientific information not merely understandable but genuinely meaningful to the person reading or watching. This communicative ambition draws on the full range of journalistic craft, including narrative skill, visual communication, the use of data visualization, and the deep engagement with specific

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places, communities, and individuals that makes abstract scientific findings emotionally as well as intellectually real.

82.2 Landmark Science Journalism: Imagined Cases

The vision of excellent Bangladeshi science journalism can be made more concrete by imagining the specific kinds of stories that it would produce. These are not predictions of specific stories that will be told but illustrations of the kind of journalism that the institutional and professional conditions described in this Part would make possible.

Imagine, first, a sustained investigative series on antimicrobial resistance in Bangladesh's shrimp industry. The series begins not with statistics about resistance rates but with the specific experience of a family in Satkhira district whose child developed a severe infection with a drug-resistant pathogen that can be traced, through careful epidemiological analysis and microbiological investigation, to the antibiotic residues in the aquaculture ponds that dominate the local economy. The series then traces the chain of causation from the farm to the pharmacy to the regulatory failure: the veterinary antibiotics that are legally restricted but widely used; the regulatory framework that is formally adequate but practically unenforced; the economic incentives that make antibiotic use rational for individual farmers even as it creates catastrophic collective risk; the international market dynamics that drive the conditions of production; and the scientific literature, largely produced in Northern institutions, that documented the resistance risk years before the crisis became impossible to ignore. The series combines the authority of laboratory analysis, which the investigative team has conducted independently with the support of a university partner, with the moral authority of testimony from the families whose children are the most immediate human victims of the systemic failure.

Imagine, second, a collaborative cross-border investigation into the funding flows and research priorities of the major international agricultural research institutions whose work shapes what Bangladeshi agricultural scientists work on and what options are available to Bangladeshi farmers. The investigation reveals the specific ways in which the priorities of major donors, including the Gates Foundation, the US government's agricultural research agencies, and the major seed and agrochemical companies, shape the research agenda of CGIAR institutions in ways that prioritize certain technological solutions, particularly transgenic crops and precision agriculture technologies, over alternative approaches to food system improvement that might be more appropriate to the specific conditions of Bangladeshi agriculture. The investigation does not claim that the dominant research agenda is entirely wrong: it asks, with the specificity and evidence that investigative journalism demands, whether the distribution of research investment reflects the actual needs and priorities of Bangladeshi farmers or the interests and preferences of the institutions that fund and conduct the research.

Imagine, third, a multimedia documentary series that follows the Karnafuli River from its source in the Chittagong Hill Tracts to its mouth in the Bay of Bengal, documenting the cumulative environmental degradation of the river system and its consequences for the communities that depend on it. The series integrates scientific measurement, using water quality data collected by an independent team of environmental scientists who are partners in the project, with the

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testimony of fishing communities whose livelihoods have been destroyed by pollution, of public health workers who treat the patients whose illnesses can be traced to contaminated water, of engineers and regulators who understand the technical dimensions of the pollution problem but are constrained by institutional and political factors from implementing effective solutions, and of lawyers and activists who are pursuing judicial remedies for the communities whose rights have been violated. The series is produced in Bangla for the primary Bangladeshi audience but is simultaneously available with English subtitles for international audiences, and it is specifically designed to be usable as a resource in the advocacy campaigns of the environmental and civil society organizations working on river protection.

82.3 The Science Journalist as Public Intellectual

The vision of mature Bangladeshi science journalism includes a vision of the science journalist not merely as a practitioner of a craft but as a public intellectual: a person whose work contributes to the intellectual life of the society and whose voice carries weight in the public conversations that shape scientific and policy decisions.

The concept of the public intellectual, as developed by theorists including Edward Said and Russell Jacoby, implies a distinctive kind of social role: the person who brings serious intellectual resources to bear on public questions, who speaks across the boundary between specialist expertise and public discourse, and who is willing to take positions and defend them in the public arena rather than retreating into the safety of academic neutrality or professional expertise. Said's argument in "Representations of the Intellectual" that the genuine public intellectual must be willing to speak truth to power, to challenge received opinion, and to represent the interests of the marginalized and the voiceless against the comfortable orthodoxies of institutional power, is directly relevant to the vision of science journalism this textbook advocates.

The Bangladeshi science journalist as public intellectual is not a neutral conveyor of scientific findings but a participant in the public conversation about what scientific knowledge means, what it requires of institutions, and what it demands from citizens. She participates in that conversation not by substituting her judgment for the judgment of scientists or of the public but by contributing a specific form of expertise: the expertise of someone who has spent years investigating the relationship between scientific knowledge and institutional power, between technical expertise and democratic accountability, and between the findings of research and the lived experiences of the communities those findings concern.

This public intellectual role carries specific obligations that distinguish it from the ordinary practice of journalism. It requires a commitment to sustained engagement with a topic over time, rather than the episodic coverage that the news cycle typically demands. It requires a willingness to take and defend positions, rather than the false balance of presenting "both sides" of questions where the evidence is not actually balanced. It requires a commitment to public education in the best sense: not the patronizing transmission of correct information to an ignorant public but the genuine effort to make complex and important matters accessible to people whose engagement with those matters is essential for democratic self-governance. And it requires the intellectual

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humility to acknowledge uncertainty, to revise positions when evidence requires it, and to represent the limitations of one's own knowledge as honestly as one represents the claims of the institutions and interests one investigates.

Chapter Eighty-Three: Final Theoretical Synthesis - Science Journalism as Jurisprudential, Philosophical, and Democratic Practice

83.1 The Convergence of Traditions

This textbook has drawn on a remarkably diverse range of intellectual traditions in constructing its account of science journalism in Bangladesh: the philosophy of science, from logical positivism through post-positivism to science and technology studies; the social theory of journalism, from the sociology of news production through critical political economy to journalism studies; the jurisprudential traditions of natural law, legal positivism, and critical legal studies; the political philosophy of liberal democracy, deliberative democracy, and radical democracy; the epistemological frameworks of feminist standpoint theory and epistemic justice; and the communication theory of the deficit model, the contextual model, and the dialogue model of science communication.

This diversity might appear to risk incoherence: a theoretical bricolage that assembles incompatible frameworks without sufficient attention to their mutual tensions. The book's authors accept this risk as an honest reflection of the genuine intellectual situation of science journalism in Bangladesh. The questions that science journalism must grapple with, what counts as knowledge, who has the authority to speak it, what institutions are responsible for producing and protecting it, and what its relationship to democratic power and democratic practice should be, are questions that no single theoretical tradition has answered with sufficient depth and comprehensiveness to make resort to other traditions unnecessary. The intellectual diversity of this textbook reflects the intellectual difficulty of its subject.

But there is a convergence among these traditions that is more than merely formal. Each of them, in its own vocabulary and with its own emphases, points toward the same fundamental conclusion about the nature of the science journalist's democratic function: that it is a function of mediation, not merely in the sense of translating between technical and public language, but in the deeper sense of mediating between power and accountability, between institutional authority and democratic challenge, between the knowledge that exists and the knowledge that the democratic public needs in order to govern itself.

The philosophy of science, in its post-positivist forms, tells us that scientific knowledge is produced through social practices that are subject to the same forces of interest, power, and institutional dynamics as any other social practice, and that the journalist's role in making these practices transparent and accountable is essential for the integrity of the knowledge production system itself. The jurisprudential tradition, in its most sophisticated forms, tells us that the protection of press freedom is not merely a matter of individual rights but a structural

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requirement of the rule of law, because an effective rule of law requires an informed citizenry, and an informed citizenry requires journalism that can investigate and communicate the performance of legal and regulatory institutions. The democratic theory tradition, in its deliberative and radical democratic forms, tells us that genuine democratic self-governance requires not just the formal availability of information but the active cultivation of the epistemic conditions for democratic deliberation, including the amplification of marginalized voices, the challenge of manufactured consensus, and the sustained institutional commitment to making scientific knowledge relevant to democratic choice.

83.2 The Internal Conflicts of the Science Journalist: A Philosophical Account

This textbook has given significant attention throughout to what it calls the internal conflicts of the science journalist: the tensions between competing values, competing loyalties, and competing conceptions of the professional role that are not resolved by any formula or ethical code but must be navigated, repeatedly and imperfectly, in the specific situations that constitute a journalistic career.

These internal conflicts deserve a philosophical account that goes beyond the simple enumeration of competing considerations. They are not merely professional dilemmas: they are manifestations of deeper philosophical tensions that characterize the human condition in modernity, tensions between the demands of knowledge and the demands of solidarity, between the obligation to truth and the obligations of care, between the aspiration to objectivity and the inevitability of situated perspective.

The tension between truth and harm is perhaps the most fundamental. The science journalist who discovers information about a scientific development, a regulatory failure, or an institutional scandal that is true and important but whose publication may cause harm, to individuals, to communities, to institutional relationships, or to herself, faces a conflict between two genuine obligations. The philosophical tradition of consequentialism tells her to weigh the harms and benefits of publication and to choose the course of action that produces the best overall outcome. The tradition of deontological ethics tells her that the obligation to truth is categorical and cannot be overridden by consequences, because the practice of journalism as a whole depends on the journalist's unconditional commitment to truthfulness. The tradition of care ethics tells her to attend to the specific relationships and vulnerabilities involved in the situation and to let the obligations of care shape her judgment about what truthfulness requires.

None of these traditions provides a fully satisfactory answer, and the science journalist who has genuinely internalized all three perspectives, as this textbook argues she should, will not find the tension dissolved by theoretical analysis. She will find it navigated, imperfectly, case by case, with the help of colleagues, mentors, professional ethics frameworks, and the accumulated wisdom of her own experience. This imperfect navigation is not a failure: it is the form that moral seriousness takes in the face of genuine moral complexity.

The tension between independence and solidarity is equally deep. The science journalist who covers the health consequences of pollution in a working-class community faces a choice

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between the critical independence that journalism requires, the willingness to challenge not just the polluters but the community's own leaders and organizations if they are wrong or are pursuing strategies that the evidence does not support, and the solidarity with the community whose members are the subject and often the source of her reporting. The posture of pure critical independence, which treats every actor in a story as equally subject to investigative scrutiny regardless of their structural position of power or vulnerability, is sometimes appropriate and sometimes a way of obscuring systematic injustice behind a formal symmetry. The posture of solidarity that uncritically amplifies the community's own narrative, without the critical analysis that genuine journalism requires, is sometimes appropriate and sometimes a way of producing advocacy rather than journalism.

The tension between complexity and accessibility is the professional tension that most directly shapes the day-to-day practice of science journalism. The journalist who wants to communicate both the genuine complexity of a scientific question and the practical accessibility that broad public engagement requires is always, in a sense, failing: simplifying more than the complexity warrants or preserving more of the complexity than accessibility allows. The philosophical resolution of this tension is not available in theory: it must be found in practice, in the specific choices about what to include and exclude, what to explain and what to trust the reader to understand, and what metaphors, examples, and narrative devices can carry the weight of complex ideas without distorting them.

83.3 The Question of Adulthood in Science Journalism

This textbook's title promises engagement with the concept of adulthood in the science journalism context, and the preceding parts have touched on this concept at various points without giving it the sustained philosophical treatment it deserves. The concept of adulthood, as a metaphor for the condition of maturity, independence, and full moral and professional agency, is relevant to science journalism in Bangladesh in at least three distinct but related senses.

The first sense is the adulthood of the individual journalist: the transition from professional apprenticeship to professional maturity that involves the development of independent critical judgment, the willingness to challenge authority including the authority of editors, owners, and institutional scientists, and the acceptance of the full weight of professional responsibility for one's own work. The young journalist who defers to her editor's political judgments, who accepts scientific authority at face value because challenging it seems presumptuous, and who avoids the difficult stories because the risks seem to outweigh the rewards, has not yet achieved professional adulthood in the full sense. The mature science journalist, in contrast, is capable of holding her own ground in editorial disputes, of challenging scientific authority on the basis of evidence and analysis, and of accepting the risks of principled journalism as the necessary cost of genuine professional integrity.

The second sense is the adulthood of the science journalism profession in Bangladesh: the transition from a condition of structural dependence, on political patrons, on commercial advertisers, on international funders, and on institutional scientific sources, toward a condition of genuine professional autonomy in which the profession's norms, standards, and decisions are

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made by journalists themselves on the basis of professional rather than political criteria. This professional adulthood has not yet been achieved in Bangladesh. The structural conditions that make it difficult, and the reform agenda needed to create the conditions for it, have been analyzed in this Part. But the vision of professional adulthood is itself an important resource for the reform agenda: it provides a normative standard against which the inadequacy of current conditions can be measured and toward which reform efforts can be oriented.

The third sense is the adulthood of the public: the vision of the public as a community of competent democratic citizens who are capable of engaging with complex scientific information, of making their own judgments about contested scientific questions, and of participating in democratic deliberation about the policy implications of scientific knowledge. This vision of public adulthood stands in contrast to the deficit model of science communication, which implicitly treats the public as an ignorant mass that needs to be filled with correct scientific information by expert communicators, and to the populist model, which treats the public as a collection of common sense wisdom that should override the conclusions of expert scientific research. The vision of public adulthood is the vision of a democratic community capable of genuine epistemic self-governance: of forming, on the basis of accessible, accurate, and critically evaluated scientific information, the collective judgments that democratic self-governance requires.

This vision of public adulthood is not naive. It does not assume that all citizens have or can acquire the technical expertise to evaluate primary scientific literature. It does not ignore the ways in which cognitive biases, cultural identities, and economic interests shape the reception of scientific information. But it holds, as a normative commitment, that the goal of science journalism is not to manage or manipulate the public's beliefs but to support the public's own epistemic capacities and to treat the public as a community of moral and epistemic equals whose engagement with scientific knowledge deserves respect.

83.4 Complexity and the Limits of the Narrative Form

The preceding section's account of the internal conflicts of science journalism points toward a broader philosophical issue that this textbook's coda should address honestly: the tension between the narrative form that journalism necessarily employs and the genuine complexity of the social and scientific realities that journalism attempts to describe. This tension is not merely a practical challenge: it is a philosophical one, bearing on the epistemological status of journalistic knowledge and the appropriate humility with which the science journalist should hold her own account of complex realities.

Narrative, as the philosophical and literary theory tradition from Aristotle through Ricoeur and Bruner has analyzed, is a fundamental structure of human understanding. Humans understand events by organizing them into stories with beginnings, middles, and ends; with agents who make choices that have consequences; with causes that produce effects; and with moral significance that attaches to the actions of identifiable actors. Narrative is cognitively powerful precisely because it engages the same neural and emotional structures that organize direct human

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experience, making narrative accounts of distant events feel personally real in ways that abstract descriptions do not.

But the realities that matter most for Bangladeshi science journalism, including the climate system, the dynamics of disease emergence, the political economy of agricultural research, and the institutional dynamics of media capture, are not narrative realities. They are complex adaptive systems characterized by emergence, non-linearity, feedback loops, and distributed causation that resist the attribution of outcomes to the decisions of identifiable agents. The science journalist who forces these systemic realities into narrative form, finding her villain, her victim, and her hero among the cast of characters who participate in complex systems, may produce a story that is emotionally compelling and humanly accessible while being epistemologically misleading about the nature of the phenomenon she describes.

The philosophical challenge for science journalism is not to abandon narrative, which is essential for public communication of any kind, but to develop narrative forms that can carry the weight of genuine complexity without distorting it. Some of the most important science journalism of the last several decades has succeeded in doing this. The narrative of Oreskes and Conway's "Merchants of Doubt" is a narrative about actors who make deliberate choices, but it situates those choices within a systemic account of how manufactured uncertainty functions in democratic societies. The narrative of Elizabeth Kolbert's climate reporting consistently places individual human stories within an account of systemic forces that transcend individual agency. The narrative of Rob Bilott's account of the PFAS contamination in West Virginia, serialized in the New York Times and subsequently adapted into a film, tells a story of heroic individual legal advocacy while making clear that the systemic failure it represents extends far beyond the specific actors who are its most visible protagonists.

The development of narrative forms adequate to complexity is as much an artistic as a philosophical challenge, and this textbook does not pretend to resolve it in the abstract. What it can say is that the development of Bangladeshi science journalism's capacity to address genuinely complex systemic realities requires investment not just in scientific literacy and investigative methodology but in narrative craft: in the education of journalists who can write, who can find the human story within the systemic account, and who can respect both the particularity of individual experience and the generality of systemic causation in a single piece of work.

Coda to Part Nine and to the Textbook: The Contested Lens and the Promise of Light

This textbook began, in its prolegomena to Part One, by insisting that there is no innocent starting point for a textbook about science journalism in Bangladesh. It ends in the same spirit of honesty about the difficulty and the importance of the enterprise.

The "contested lens" of the title is not a metaphor that suggests the lens is broken or that seeing through it is impossible. A contested lens is one whose authority is disputed, whose calibration is

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continuously challenged, and whose focus must be continuously adjusted in response to the changing realities it attempts to capture. A contested lens is one that is worth arguing over precisely because of what it has the potential to show us. The contestation is a sign of significance, not of futility.

Science journalism in Bangladesh is a contested lens in this sense. Its authority is disputed by those who would prefer the public's vision of scientific reality to be less clearly focused on the failures of powerful institutions. Its calibration is continuously challenged by the political and commercial forces that would prefer its angle of view to be more accommodating to their interests. Its focus must be continuously adjusted to the changing scientific and political landscape of a country that is simultaneously one of the world's most compelling experiments in post-colonial democratic development and one of its most instructive cautionary tales about the vulnerability of that development to institutional capture and democratic regression.

The journalists who have worked within this contested lens, under conditions that this textbook has documented with some of their worst specificity, from the murder of seven journalists since July 2024 to the freezing of journalists' bank accounts to the exposure of fourteen thousand journalists' personal data in a government data breach, deserve acknowledgment that goes beyond the routine expression of respect for professional courage. They are doing, under conditions that most of their international counterparts will never face, the work that makes democratic self-governance possible: the work of making the complex relationships between scientific knowledge, institutional power, and human welfare visible to a public that depends on that visibility to participate meaningfully in the decisions that shape its conditions of life.

This textbook's most fundamental argument is that their work matters and that the conditions for doing it well matter enormously. The science journalist who is killed, imprisoned, financially destroyed, or driven out of the profession by the structural forces that this textbook has analyzed is not merely a professional casualty. She is a democratic loss, a reduction in the collective capacity of Bangladeshi society to know the things it needs to know to govern itself justly and wisely. Conversely, the institutional reforms, the educational investments, the professional developments, and the individual acts of courage that expand the space for science journalism in Bangladesh are not merely professional gains. They are democratic achievements, contributions to the conditions of collective self-knowledge without which the promise of democracy cannot be realized.

The vision of mature and excellent Bangladeshi science journalism that this Part has articulated, the vision of science journalism as a practice of genuine inquiry, genuine accountability, epistemic justice, and democratic commitment, is not a comfortable vision. It demands more of journalists than the existing institutional conditions support or reward. It demands more of media organizations than the current political economy makes easy to provide. It demands more of educational institutions than the current curriculum and faculty development situation makes straightforward to deliver. And it demands more of the political and civic community than the structural conditions of Bangladeshi institutional development currently make simple to achieve.

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But the demand is justified. The stakes of science journalism in Bangladesh are not abstract. They are the stakes of whether the communities most vulnerable to climate displacement will have advocates capable of making their situation visible to those with the power to respond. They are the stakes of whether the families affected by preventable disease outbreaks will have journalism capable of documenting the institutional failures that made the outbreaks preventable and forcing accountability for those failures. They are the stakes of whether the farmers making decisions about new agricultural technologies will have the information they need to understand what the science actually says, rather than what the commercial interests promoting the technologies want them to believe it says.

In the face of these stakes, the difficulty of the work is not a reason for despair. It is, to borrow a phrase from the philosophical tradition of existentialism that this textbook has not otherwise drawn on, a reason for commitment: the kind of commitment that does not depend on confidence in a favorable outcome but that arises from the recognition that the work is worth doing regardless of whether its immediate results justify the effort.

The students who read this textbook, who will carry the work of Bangladeshi science journalism into the next decades of its development, deserve to know both the difficulty of what they are undertaking and the genuine importance of undertaking it. They deserve to know that the intellectual traditions they are drawing on, the philosophy of science, the jurisprudence of press freedom, the political theory of democratic communication, and the ethics of epistemic justice, are not merely academic frameworks. They are weapons in the ongoing struggle to expand the space of public knowledge in a society where that struggle has always been difficult and has always mattered.

The contested lens, held by imperfect hands, in imperfect institutional conditions, with imperfect technical equipment, and with imperfect but genuine commitment to the complex truths it has the capacity to reveal, is what Bangladeshi science journalism is. The promise of Part Nine, the promise of this textbook, is that it can be better: better calibrated, better supported, better understood, and better practiced than it currently is. That promise is not guaranteed by the intellectual analysis this textbook has offered. It is a possibility, worth working for, worth investing in, and worth the difficulty that working and investing for it entails.

Chapter Notes and Further Reading for Part Nine

On the future of science journalism globally, the Reuters Institute for the Study of Journalism's annual Digital News Report provides the most comprehensive ongoing survey of trends in news consumption and media trust across countries. The World Federation of Science Journalists' reports on the state of the profession, produced with varying frequency, provide the most systematic global perspective on science journalism specifically. The Knight Science Journalism Program at MIT, which produces the Knight Science Journalism Tracker and maintains an extensive online archive of science journalism criticism and analysis, is the most consistently useful online resource for current discussions in the field.

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On the political theory of deliberative democracy and its relevance to science communication and journalism, Jurgen Habermas's "The Structural Transformation of the Public Sphere" (1962, translated 1989) and "Between Facts and Norms" (1996) provide the foundational theoretical framework, though students should supplement Habermas with the substantial critical literature his work has generated, including Nancy Fraser's critique of the concept of the public sphere and its exclusions, Iris Marion Young's critique of the normative adequacy of deliberative democracy, and Seyla Benhabib's reconstruction of the deliberative model that responds to these critiques. More recent work, including Rousiley Maia and colleagues' 2024 empirical research on deliberative capabilities in educational settings and Henri Huttunen's 2025 argument for deliberative democratic education from a long-term perspective, extends the theoretical framework in directions directly relevant to journalism education.

On AI and journalism, the emerging literature is growing extremely rapidly. Tow Center for Digital Journalism at Columbia produces consistently excellent research on the intersection of technology and journalism, including on AI applications. The report by Felix Simon and colleagues on AI in journalism education, published through the Reuters Institute in 2024, provides a useful overview of the pedagogical dimensions. The broader AI ethics literature, including the work of Safiya Umoja Noble on algorithmic bias and Ruha Benjamin on the racial dimensions of AI systems, provides important critical resources for thinking about how AI systems specifically affect marginalized communities including those in the Global South.

On epistemic justice and its relevance to science communication, Miranda Fricker's "Epistemic Injustice: Power and the Ethics of Knowing" (2007) is the foundational text. The subsequent literature, including José Medina's "The Epistemology of Resistance" (2012) and Kristie Dotson's extensions of the framework, provides important elaborations. For the specific application of epistemic justice concepts to science communication and science journalism, the emerging literature in social epistemology of science, including work by Heidi Grasswick and Alison Wylie, provides the most directly relevant resources.

On journalism education reform generally, the Journalism Education Association's publications and the Journalism and Mass Communication Educator journal provide ongoing coverage of curricular and pedagogical developments. The specific literature on science journalism education is thinner but growing, with contributions from the Knight Science Journalism Program and from journals including Journalism Practice and the Journal of Science Communication providing the most relevant recent work.

On Bangladesh's legal and institutional reform landscape, the Oxford Human Rights Hub's analysis of what they have termed "weaponized legalism" in the Bangladesh transitional context, published in their online series in 2025 and 2026, provides the most theoretically sophisticated comparative analysis. The Clooney Foundation for Justice's November 2025 analysis of the Digital Security Act, produced in partnership with the Centre for Governance Studies Bangladesh, provides the most comprehensive empirical documentation of the DSA's impact. Article 19's submission to the Bangladesh Media Reform Commission of February 2025 provides the most systematic articulation of the international human rights standards that should guide media law reform. The RSF annual country reports on Bangladesh, the Freedom House

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Freedom in the World and Freedom on the Net reports, and the CPJ and IFJ periodic reports provide the most regularly updated documentation of press freedom conditions.

On the philosophy of complexity and its relationship to journalism and communication, Morin's work on complex thinking, Paul Cilliers's "Complexity and Postmodernism" (1998), and the more accessible work of Yaneer Bar-Yam on complex systems science provide the theoretical foundations. The application of complexity theory to journalism practice has been developed by scholars including Alfred Hermida and Neil Thurman, and the emerging field of computational journalism engages directly with the challenge of representing complex system dynamics through journalistic forms.

On the history and theory of the public intellectual and its relevance to journalism, Edward Said's "Representations of the Intellectual" (1994) remains the most compelling and most directly relevant treatment. Russell Jacoby's "The Last Intellectuals" (1987) provides an important historical perspective on the decline of public intellectual culture. More recently, the work of Cornel West, Martha Nussbaum, and Amartya Sen on the role of public reason and public discourse in democratic societies provides resources for thinking about the journalist as public intellectual in a more contemporary theoretical framework.

For students who want to develop their understanding of the political economy of international science, the most accessible and compelling entry points remain Ben Goldacre's "Bad Pharma" (2012) for the pharmaceutical domain, Naomi Oreskes and Erik Conway's "Merchants of Doubt" (2010) for the climate and tobacco domains, and Philip Mirowski's "Science-Mart" (2011) for the broader political economy of academic science. The more recent work of Wendy Brown on neoliberal rationality and institutional transformation provides the most comprehensive theoretical framework for understanding the structural forces that shape the political economy of scientific knowledge production in the contemporary period.

On narrative and complexity in journalism and science communication, the work of Walter Fisher on narrative rationality and the work of Paul Ricoeur on narrative and time provide the philosophical foundations. More practically oriented treatments include Jack Hart's "Storycraft" and Tom Rosenstiel and Bill Kovach's "Blur: How to Know What's True in the Age of Information Overload," though the specifically science-journalistic application of these insights in the Global South context remains undertheorized and deserves the sustained attention of the next generation of Bangladeshi science journalism scholars and practitioners.

This concludes Part Nine, the final part of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge." The authors hope that the nine parts of this textbook have provided the student of science journalism in Bangladesh with the theoretical resources, the historical understanding, the jurisprudential framework, and the professional vision needed to approach the practice of science journalism with the depth, the courage, and the democratic commitment that the task requires. The work is difficult. The stakes are high. And it matters, more than can easily be said, that it be done well.

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End of "The Contested Lens: Science Journalism in Bangladesh: Power, Truth, Authority, and the Architecture of Public Knowledge."

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The Contested Lens: Science Journalism in Bangladesh

by S M Nazmuz Sakib

is a graduate level textbook that examines science journalism as a deeply political practice entangled with power, law, and democratic accountability in Bangladesh. Written after the 2024 political transition, the book covers the history of Bangladeshi media, the legal framework including digital security laws, the political economy of ne ws, and specific domains such as health, environment, agriculture, an technology. It addresses gender, epistemic justice, digital transformation, artificial intelligence, and international scientific collaboration

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